

配列表
SEQUENCE LISTING

<110> The Kitasato Institute

<120> A GENE CODING FOR AVERMECTIN AGLYCON SYNTHETASE

<130> PH-775-PCT

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<150> JP99/46961

<151> 24-FEB-1999

<160> 16

<170> PatentIn Ver. 2.0

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<211> 30692

<212> DNA

<213> Streptomyces avermitilis

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<221> CDS

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09914286-082401

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09914236-082401

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 1925 1930 1935

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 1955 1960 1965

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 1970 1975 1980

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2005 2010 2015	
ttc cgt gca ctc ggc ttc gat tca ctc acg gcc gtc gag ttc cga aac Phe Arg Ala Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Phe Arg Asn	6096
2020 2025 2030	
ctg ctg atc aag gca aca gga ctc cgc ctt cct gtc tcg ctg gtc ttc Leu Leu Ile Lys Ala Thr Gly Leu Arg Leu Pro Val Ser Leu Val Phe	6144
2035 2040 2045	
gac cac ccg acc cct gcc aaa ctc gcc gta cac ctg cag aac caa ctg Asp His Pro Thr Pro Ala Lys Leu Ala Val His Leu Gln Asn Gln Leu	6192
2050 2055 2060	
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2065 2070 2075 2080	
gag gct tct gtc acc gag ccg atc gcc atc gtt ggc atg gcc tgt cgt Glu Ala Ser Val Thr Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg	6288
2085 2090 2095	
ttc ccc ggc gga gtg acc tcg gcg gac gac ttc tgg gat ctg atc tcc Phe Pro Gly Gly Val Thr Ser Ala Asp Asp Phe Trp Asp Leu Ile Ser	6336
2100 2105 2110	
tcc gag cag gac gcg atc ggc gga ttc ccc acc gac cgc ggc tgg gac Ser Glu Gln Asp Ala Ile Gly Gly Phe Pro Thr Asp Arg Gly Trp Asp	6384
2115 2120 2125	
ctg gac acg ctc tac gac ccc gac ccc gac cac ccc ggc acc tgc tac Leu Asp Thr Leu Tyr Asp Pro Asp Pro Asp His Pro Gly Thr Cys Tyr	6432
2130 2135 2140	
acc cga aac ggc gga ttc ctc tac gac gca ggc cac ttc gac gcc gaa	6480

Thr Arg Asn Gly Gly Phe Leu Tyr Asp Ala Gly His Phe Asp Ala Glu
 2145 2150 2155 2160

ttc ttc ggc atc agc ccc cgc gaa gcc ctc gcc atg gac ccc cag caa 6528
 Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
 2165 2170 2175

cga ctc ctc ctc gaa acc gcc tgg gaa acc atc gaa cac gcc ggc atc 6576
 Arg Leu Leu Leu Glu Thr Ala Trp Glu Thr Ile Glu His Ala Gly Ile
 2180 2185 2190

aac ccc cac acc ctc cac ggc acc ccc acc gga gtc ttc acc ggc acc 6624
 Asn Pro His Thr Leu His Gly Thr Pro Thr Gly Val Phe Thr Gly Thr
 2195 2200 2205

aac gga cag gac tac gca ctt cgc gtg cac aac gcg ggc cag tca acc 6672
 Asn Gly Gln Asp Tyr Ala Leu Arg Val His Asn Ala Gly Gln Ser Thr
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gat ggt ttc gca ctg acc gga acc gcc ggc agc gtc atc tcc ggt cgt 6720
 Asp Gly Phe Ala Leu Thr Gly Thr Ala Gly Ser Val Ile Ser Gly Arg
 2225 2230 2235 2240

atc tcg tac acg ttt ggt ttt gag ggt cct gcg gtg tcg gtg gac acg 6768
 Ile Ser Tyr Thr Phe Gly Phe Glu Gly Pro Ala Val Ser Val Asp Thr
 2245 2250 2255

gct tgt tcc tcg tcg ttg gtg gct ttg cat ctg gcc tgt cag gcg ttg 6816
 Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Gln Ala Leu
 2260 2265 2270

cgt gcg ggt gag tgc tcg atg gcg ctt gcc ggg ggt gtg acg gtg atg 6864
 Arg Ala Gly Glu Cys Ser Met Ala Leu Ala Gly Gly Val Thr Val Met
 2275 2280 2285

tcg tct ccg ggt gcc ttc gtg gag ttt tcg cgg cag cgg ggt ctg gcc 6912
 Ser Ser Pro Gly Ala Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala
 2290 2295 2300

gcg gac ggg cat tgc aag gcg ttc tcg gcg gcg gcg gac ggg acc ggc 6960
 Ala Asp Gly His Cys Lys Ala Phe Ser Ala Ala Ala Asp Gly Thr Gly
 2305 2310 2315 2320

 tgg ggt gag ggt gtg ggg atg ctg ctg gtg gag cgg ctc tcc gac gcc 7008
 Trp Gly Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala
 2325 2330 2335

 cat cgc aac ggt cac cgt gtc ctg gcc gtg gtg cgt ggc agt gcg gtc 7056
 His Arg Asn Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val
 2340 2345 2350

 aac cag gac ggt gcg agc aac ggt ctg acc gcg ccc aac ggg ccg tcc 7104
 Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser
 2355 2360 2365

 cag cag cgt gtc atc cgc cag gcc ctc gcc aac gcc ggc ttg tcg gcc 7152
 Gln Gln Arg Val Ile Arg Gln Ala Leu Ala Asn Ala Gly Leu Ser Ala
 2370 2375 2380

 ggt gat gtc gac gcg gtg gag gcc cac ggc acc ggc acc act ttg ggc 7200
 Gly Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly
 2385 2390 2395 2400

 gac ccg atc gag gcc cag gcc ctc ctc gcg acc tac gga cag gac cgt 7248
 Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp Arg
 2405 2410 2415

 gcc ggc gag ggg ccg ctg tgg ctg ggc tcg gtc aag tcc aat gtc ggt 7296
 Ala Gly Glu Gly Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Val Gly
 2420 2425 2430

 cac aca cag gct gcc gcg ggc gtc gcc ggg gtg atc aag atg gtg atg 7344
 His Thr Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Met
 2435 2440 2445

 gcg ctg cgg cat ggt ctg ctg ccg cgg acg ttg cat gtg gat gag ccg 7392

Ala Leu Arg His Gly Leu Leu Pro Arg Thr Leu His Val Asp Glu Pro
 2450 2455 2460

tcg ccg cat gtg gac tgg tcc gcg ggt gcg gtg cag ctg ctg acg gag 7440
 Ser Pro His Val Asp Trp Ser Ala Gly Ala Val Gln Leu Leu Thr Glu
 2465 2470 2475 2480

acg gtg ccc tgg ccc ggc ggg gag ggg cgg cta cgg cgg gca gga gtg 7488
 Thr Val Pro Trp Pro Gly Gly Glu Gly Arg Leu Arg Arg Ala Gly Val
 2485 2490 2495

tca tca ttc ggc gtc agc ggc acc aac gcc cac gtc atc ctc gaa gaa 7536
 Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu
 2500 2505 2510

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 Ala Pro Ala Asp Asp Val Pro Gly Gly Pro Pro Ala Gly Glu Gly Asp
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 Ala Gly Ser Asp Asp Glu Ala Ala Ala Gly Ser Pro Gly Val Trp Pro
 2530 2535 2540

tgg ctg gtg tcg gcc aag tcg cag ccg gcc ctg cgc gcc cag gcc cag 7680
 Trp Leu Val Ser Ala Lys Ser Gln Pro Ala Leu Arg Ala Gln Ala Gln
 2545 2550 2555 2560

gcc ctg cac gcc cac ctc acc gac cac ccc ggc ctc gac ctc gcg gat 7728
 Ala Leu His Ala His Leu Thr Asp His Pro Gly Leu Asp Leu Ala Asp
 2565 2570 2575

gtc gga tac acc ctc gcc cac gcc cgc gcc gtg ttc gac cac cgc gcc 7776
 Val Gly Tyr Thr Leu Ala His Ala Arg Ala Val Phe Asp His Arg Ala
 2580 2585 2590

acc ctc atc gcc gcg gac cgc gac acg ttc ctg caa gca ctc cag gca 7824
 Thr Leu Ile Ala Ala Asp Arg Asp Thr Phe Leu Gln Ala Leu Gln Ala
 2595 2600 2605

ctc gcc gca ggc gag ccc cac ccc gcc gtc atc cac agc agc gcc ccg 7872
 Leu Ala Ala Gly Glu Pro His Pro Ala Val Ile His Ser Ser Ala Pro
 2610 2615 2620

ggc ggg acc ggg acc ggg gag gcc gca gga aag acc gca ttc atc tgc 7920
 Gly Gly Thr Gly Thr Gly Glu Ala Ala Gly Lys Thr Ala Phe Ile Cys
 2625 2630 2635 2640

tcc gga cag ggc acc caa cgc ccc ggc atg gcc cac ggc ctc tac cac 7968
 Ser Gly Gln Gly Thr Gln Arg Pro Gly Met Ala His Gly Leu Tyr His
 2645 2650 2655

acc cac ccc gtc ttc gcc gcc gca ctc aac gac atc tgc acc cac ctc 8016
 Thr His Pro Val Phe Ala Ala Ala Leu Asn Asp Ile Cys Thr His Leu
 2660 2665 2670

gac ccc cac ctc gac cac ccc ctc ctc ccc ctc ctc acc caa aac gac 8064
 Asp Pro His Leu Asp His Pro Leu Leu Pro Leu Leu Thr Gln Asn Asp
 2675 2680 2685

aac gac aac gag gac gcg gcc gca ctg ctc cag cag acc cgc tac gcc 8112
 Asn Asp Asn Glu Asp Ala Ala Ala Leu Leu Gln Gln Thr Arg Tyr Ala
 2690 2695 2700

cag ccc gcc ctc ttc gcc ttc cag gtc gcc ctc cac cgc ctc ctc acc 8160
 Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu Thr
 2705 2710 2715 2720

gac ggc tac cac atc acc ccc cac tac tac gcc gga cac tcc ctc ggc 8208
 Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu Gly
 2725 2730 2735

gaa atc acc gcc gcc cac ctc gcc ggc atc ctc acc ctc acc gac gcc 8256
 Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp Ala
 2740 2745 2750

acc acc ctc atc acc caa cgc gcc acc ctc atg caa acc atg ccc ccc 8304

Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro Pro
 2755 2760 2765

ggc acc atg acc acc ctc cac acc acc ccc cac cac atc acc cac cac 8352
 Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile Thr His His
 2770 2775 2780

ctc acc gcc cac gaa aac gac ctc gcc atc gcc gcc atc aac acc ccc 8400
 Leu Thr Ala His Glu Asn Asp Leu Ala Ile Ala Ala Ile Asn Thr Pro
 2785 2790 2795 2800

acc tcc ctc gtc atc agc ggc acc ccc cac acc gtc caa cac atc acc 8448
 Thr Ser Leu Val Ile Ser Gly Thr Pro His Thr Val Gln His Ile Thr
 2805 2810 2815

acc ctc tgc caa caa caa ggc atc aaa acc aaa acc ctc ccc acc aac 8496
 Thr Leu Cys Gln Gln Gln Gly Ile Lys Thr Lys Thr Leu Pro Thr Asn
 2820 2825 2830

cac gcc ttc cac tcc ccc cac acc aac ccc atc ctc aac caa ctc cac 8544
 His Ala Phe His Ser Pro His Thr Asn Pro Ile Leu Asn Gln Leu His
 2835 2840 2845

cag cac acc caa acc ctc acc tac cac cca ccc cac acc ccc ctc atc 8592
 Gln His Thr Gln Thr Leu Thr Tyr His Pro Pro His Thr Pro Leu Ile
 2850 2855 2860

acc gcc aac acc cca ccc gac caa ctc ctc acc ccc cac tac tgg acc 8640
 Thr Ala Asn Thr Pro Pro Asp Gln Leu Leu Thr Pro His Tyr Trp Thr
 2865 2870 2875 2880

caa caa gcc cgc aac acc gtc gac tac gcc acc acc acc caa acc ctc 8688
 Gln Gln Ala Arg Asn Thr Val Asp Tyr Ala Thr Thr Thr Gln Thr Leu
 2885 2890 2895

cac caa cac ggc gtc acc acc tac atc gaa ctc gga ccc gac aac acc 8736
 His Gln His Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro Asp Asn Thr
 2900 2905 2910

ctc acc acc ctc acc cac cac aac ctc ccc aac ccc ccc acc acc acc 8784
 Leu Thr Thr Leu Thr His His Asn Leu Pro Asn Pro Pro Thr Thr Thr
 2915 2920 2925

ctc acc ctc acc cac ccc cac cac cac ccc caa acc cac ctc ctc acc 8832
 Leu Thr Leu Thr His Pro His His His Pro Gln Thr His Leu Leu Thr
 2930 2935 2940

aac ctc gcc aaa acc acc acc acc tgg cac ccc cac cac tac acc cac 8880
 Asn Leu Ala Lys Thr Thr Thr Thr Trp His Pro His His Tyr Thr His
 2945 2950 2955 2960

cac gac aac caa ccc cac acc cac acc cac ctc gac ctc ccc acc tac 8928
 His Asp Asn Gln Pro His Thr His Thr His Leu Asp Leu Pro Thr Tyr
 2965 2970 2975

ccc ttc caa cac cac cac tac tgg ctc gaa agc aca cag ccc ggt gcc 8976
 Pro Phe Gln His His His Tyr Trp Leu Glu Ser Thr Gln Pro Gly Ala
 2980 2985 2990

ggc aac gtg tca gca gcc gga ctc gac ccc acc gaa cac ccc cta ctc 9024
 Gly Asn Val Ser Ala Ala Gly Leu Asp Pro Thr Glu His Pro Leu Leu
 2995 3000 3005

ggc gcc aca ttg gaa ctg gcg act gac ggt gga gcg ctt ctt gca ggg 9072
 Gly Ala Thr Leu Glu Leu Ala Thr Asp Gly Gly Ala Leu Leu Ala Gly
 3010 3015 3020

cgc ttg tct ttg agg tcg cat ccg tgg ctg gct gac cat gcc gtc ggc 9120
 Arg Leu Ser Leu Arg Ser His Pro Trp Leu Ala Asp His Ala Val Gly
 3025 3030 3035 3040

ggc acg gtg ctg ctg tcg ggc gcc acc ttc ctc gaa ctc gcc ctt cat 9168
 Gly Thr Val Leu Leu Ser Gly Ala Thr Phe Leu Glu Leu Ala Leu His
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gcg ggc aca tac gtg ggc tgc gac cga gtg gat gag ctg acg ctg cat 9216

Ala Gly Thr Tyr Val Gly Cys Asp Arg Val Asp Glu Leu Thr Leu His
 3060 3065 3070

gcg ccg ctg gtg gtt cct gtg gat ggg ggt gtg agt gtg cag gtt ggg 9264
 Ala Pro Leu Val Val Pro Val Asp Gly Gly Val Ser Val Gln Val Gly
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gtt gcg gct gcg gat ggg gag ggg cgg cgt ttg gtg agt gtg tat gcg 9312
 Val Ala Ala Ala Asp Gly Glu Gly Arg Arg Leu Val Ser Val Tyr Ala
 3090 3095 3100

cgg ggt ggg agt gct tgt ggt ggg ggt ggt gcg tcg ggt ggg gtg tgg 9360
 Arg Gly Gly Ser Ala Cys Gly Gly Gly Gly Ala Ser Gly Gly Val Trp
 3105 3110 3115 3120

acg tgt cat gcc tcg ggg gtg ctg gtt gag gct gct gct ggt ggt gtg 9408
 Thr Cys His Ala Ser Gly Val Leu Val Glu Ala Ala Ala Gly Gly Val
 3125 3130 3135

gtg gtg gat ggt ctg gcg ggg gtg tgg ccg ccg cgg ggt gcg gtg gcg 9456
 Val Val Asp Gly Leu Ala Gly Val Trp Pro Pro Arg Gly Ala Val Ala
 3140 3145 3150

gtg gat gtc gat ggt gtc cgt gac cgt ttg gct ggg gct ggt tgt gtt 9504
 Val Asp Val Asp Gly Val Arg Asp Arg Leu Ala Gly Ala Gly Cys Val
 3155 3160 3165

ttg ggg ccg gtg ttt tcg ggg ctg cgt gcg gtg tgg cgt gat ggg ggg 9552
 Leu Gly Pro Val Phe Ser Gly Leu Arg Ala Val Trp Arg Asp Gly Gly
 3170 3175 3180

gat ttg ctg gct gag gtg tgt ctg ccg gag gag gcg tgg ggt gat gcg 9600
 Asp Leu Leu Ala Glu Val Cys Leu Pro Glu Glu Ala Trp Gly Asp Ala
 3185 3190 3195 3200

gct ggt ttt ggg ctg cat ccg gcg ttg ctg gat ggt gtg gtc cag ccg 9648
 Ala Gly Phe Gly Leu His Pro Ala Leu Leu Asp Gly Val Val Gln Pro
 3205 3210 3215

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 Leu Ser Val Leu Leu Pro Gly Gly Thr Gly Phe Gly Glu Gly Ala Gly
 3220 3225 3230

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 Phe Gly Glu Gly Val Arg Val Pro Ala Val Trp Gly Gly Val Ser Leu
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cac cgg gcg ggt gtg acc ggt gtg cgg gtg cgt gtg tcg gct gtc ggg 9792
 His Arg Ala Gly Val Thr Gly Val Arg Val Arg Val Ser Ala Val Gly
 3250 3255 3260

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 Arg Gly Gly Gly Arg Glu Ala Val Ser Val Val Val Gly Asp Glu Ala
 3265 3270 3275 3280

ggt gtg ccg gtg gcg tcg gtc gat cgt ctt gag ttg cgg cct gtg gat 9888
 Gly Val Pro Val Ala Ser Val Asp Arg Leu Glu Leu Arg Pro Val Asp
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 Met Gly Gln Leu Arg Ala Val Ser Val Ser Ala Gly Arg Arg Gly Ser
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 Leu Tyr Ala Val Gln Trp Ala Glu Val Gly Pro Val Pro Val Cys Gly
 3315 3320 3325

cag gcg tgg gcg tgg cac gag gac gtg ggt gag agc ggt ggt ggg cct 10032
 Gln Ala Trp Ala Trp His Glu Asp Val Gly Glu Ser Gly Gly Gly Pro
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gtg ccg ggg gtg gtg gtg ttg cgg tgc ccg gat gcc ggt gcc ggt ggc 10080
 Val Pro Gly Val Val Val Leu Arg Cys Pro Asp Ala Gly Ala Gly Gly
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Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Val Gly Glu Val Val Gly Gly
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gtg ttg ggt gtg gtg cag ggg tgg ctg ggg ctg gag cgg ttt gcg ggt 10176
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 Ser Arg Leu Val Val Val Thr Arg Gly Ala Val Val Ala Gly Pro Glu
 3395 3400 3405

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 Asp Gly Pro Val Asp Val Val Gly Ala Ser Val Trp Gly Leu Val Arg
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 Ser Ala Gln Ala Glu His Pro Asp Arg Phe Val Leu Leu Asp Leu Asp
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acc gac acc ggc acc gac ctc gac acc ggt gct ggt gct ggt tgg ggc 10368
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 Arg Arg Ser Asp Val Pro Ala Gln Arg Ser Gly Gly Val Pro Ala Arg
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09914286 082401

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Gly Ser Val Leu Val Thr Gly Gly Thr Gly Val Leu Gly Ala Ala Val	
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Ala Arg His Leu Ala Gly Val Cys Gly Val Arg Asp Leu Leu Leu Val	
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Ser Arg Arg Gly Pro Asp Ala Pro Gly Ala Glu Gly Leu Arg Ala Glu	
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Leu Ala Ala Leu Gly Ala Glu Val Arg Ile Val Ala Cys Asp Val Gly	
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Glu Arg Arg Glu Val Val Arg Leu Leu Glu Gly Val Pro Ala Gly Cys	
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Pro Leu Thr Gly Val Val His Ala Ala Gly Val Leu Asp Asp Ala Thr	
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Ile Ala Ser Leu Thr Pro Glu Arg Leu Gly Thr Val Phe Ala Ala Lys	
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Val Asp Ala Ala Leu Leu Leu Asp Glu Leu Thr Arg Gly Met Glu Leu	
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tcg gcg ttc gtg ctg ttc tcc tcg gcc gcg ggg atc ctg ggg tcg gcc	11040

Ser Ala Phe Val Leu Phe Ser Ser Ala Ala Gly Ile Leu Gly Ser Ala
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 3685 3690 3695

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 Tyr Arg Arg Arg Ala Ala Gly Leu Pro Gly Val Ser Leu Ala Trp Gly
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ctg tgg gaa gag gcc agc ggg atg acc ggg cac ctg gcc ggc acc gac 11184
 Leu Trp Glu Glu Ala Ser Gly Met Thr Gly His Leu Ala Gly Thr Asp
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cac cgg cgc atc atc cgt tcc ggt ctg cat ccc atg tcg acc ccg gac 11232
 His Arg Arg Ile Ile Arg Ser Gly Leu His Pro Met Ser Thr Pro Asp
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gca ctg gcc ctc ttc gat gcg gcc ctg gct ctg gac cgg ccg gtc ctg 11280
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ctg ccc gcc gac ctg cgt ccc gcc ccg ccc ctg ccg ccc ctg ctg cag 11328
 Leu Pro Ala Asp Leu Arg Pro Ala Pro Pro Leu Pro Pro Leu Leu Gln
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gac ctc ctg ccc gcc acc cgc cgc cgc acc acc cgc acc acc act acc 11376
 Asp Leu Leu Pro Ala Thr Arg Arg Arg Thr Thr Arg Thr Thr Thr Thr
 3780 3785 3790

ggt ggt gcg gac aac ggc gcc cag ctg cac gcc cgg ctg gcc ggc cag 11424
 Gly Gly Ala Asp Asn Gly Ala Gln Leu His Ala Arg Leu Ala Gly Gln
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 Thr His Glu Gln Gln His Thr Thr Leu Leu Ala Leu Val Arg Ser His
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atc gcc acc gtc ctg ggc cac acc acc ccc gac acc atc ccc ccc gac 11520
 Ile Ala Thr Val Leu Gly His Thr Thr Pro Asp Thr Ile Pro Pro Asp
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 3845 3850 3855

cgc aac cgg ctc tcc cgc acc acc gga ctc cgc ctc ccc acc acc ctc 11616
 Arg Asn Arg Leu Ser Arg Thr Thr Gly Leu Arg Leu Pro Thr Thr Leu
 3860 3865 3870

gcc ttc gac cac ccc aac ccc acc acc ctc acc cac cac ctc cac aca 11664
 Ala Phe Asp His Pro Asn Pro Thr Thr Leu Thr His His Leu His Thr
 3875 3880 3885

caa ctc cag cca caa ccg gac aac gct gtc gcc ccc gtg ttg gcg gag 11712
 Gln Leu Gln Pro Gln Pro Asp Asn Ala Val Ala Pro Val Leu Ala Glu
 3890 3895 3900

ctc gac aaa ctc gaa tcc gcc ctc tcc gcc ctc gac aaa acc gac agc 11760
 Leu Asp Lys Leu Glu Ser Ala Leu Ser Ala Leu Asp Lys Thr Asp Ser
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gcc agc gaa aga gtc acc ctg cgg ctg aag tca ctc atg ttg agg tgg 11808
 Ala Ser Glu Arg Val Thr Leu Arg Leu Lys Ser Leu Met Leu Arg Trp
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aac gca ccc cag cat ccg aca gcc gaa agc gct gat gac gac gag aag 11856
 Asn Ala Pro Gln His Pro Thr Ala Glu Ser Ala Asp Asp Asp Glu Lys
 3940 3945 3950

ttc aca tcg gca aca gag gct gag att ttc aaa ttc att gac aac gac 11904
 Phe Thr Ser Ala Thr Glu Ala Glu Ile Phe Lys Phe Ile Asp Asn Asp
 3955 3960 3965

ctc ggc ctg tcc tgaaccggac gcctgccact ccgcccgtat ccgctgggcc 11956

Leu Gly Leu Ser

3970

ctgctaggac gtga atg caa ttg gcg aat gaa gcg aag ctc ctg gaa tac 12006

Met Gln Leu Ala Asn Glu Ala Lys Leu Leu Glu Tyr

3975

3980

ctc aag cgc gtc act gcg gac ctg gac cgc act cgc cgt cgc ctg tac 12054

Leu Lys Arg Val Thr Ala Asp Leu Asp Arg Thr Arg Arg Arg Leu Tyr

3985

3990

3995

4000

gag gtg gtc gag cgt gag cag gag ccg atc gcg att gtg ggg atg gcg 12102

Glu Val Val Glu Arg Glu Gln Glu Pro Ile Ala Ile Val Gly Met Ala

4005

4010

4015

tgt cgt tac cca ggc ggg gcg acg tca ccc acg cga ctg tgg cat ctc 12150

Cys Arg Tyr Pro Gly Gly Ala Thr Ser Pro Thr Arg Leu Trp His Leu

4020

4025

4030

gtc aag tcc cag acg gac gct atc ggg gag ttc ccg acc gac cgt gga 12198

Val Lys Ser Gln Thr Asp Ala Ile Gly Glu Phe Pro Thr Asp Arg Gly

4035

4040

4045

tgg aac ctg gag cag ctc tac gac ccg gac ccc gac cgc tca gga acc 12246

Trp Asn Leu Glu Gln Leu Tyr Asp Pro Asp Pro Asp Arg Ser Gly Thr

4050

4055

4060

agt tac acg cgc agc gga ggg ttt ctc tat gac gcg ggc gac ttc gac 12294

Ser Tyr Thr Arg Ser Gly Gly Phe Leu Tyr Asp Ala Gly Asp Phe Asp

4065

4070

4075

4080

gcc gcg ttc ttc gag ttg tca ccg cgt gag gcg ctg gca atg gac ccg 12342

Ala Ala Phe Phe Glu Leu Ser Pro Arg Glu Ala Leu Ala Met Asp Pro

4085

4090

4095

cag cag cgc ctg ctg ctc gaa acc act tgg gaa acg ttc gaa cag ggc 12390

Gln Gln Arg Leu Leu Leu Glu Thr Thr Trp Glu Thr Phe Glu Gln Gly

4100

4105

4110

gga atc gac ccg agg tcc atg cgc gga agc cgg acc ggg gtt ttc gtg	12438
Gly Ile Asp Pro Arg Ser Met Arg Gly Ser Arg Thr Gly Val Phe Val	
4115 4120 4125	
ggg atc aat ccg gag gac tac acc acc gga tac aca cat cag ccc tca	12486
Gly Ile Asn Pro Glu Asp Tyr Thr Thr Gly Tyr Thr His Gln Pro Ser	
4130 4135 4140	
aac gca gtc gag ggc tac ctg ctc act ggc agc gcg gca agc att gcg	12534
Asn Ala Val Glu Gly Tyr Leu Leu Thr Gly Ser Ala Ala Ser Ile Ala	
4145 4150 4155 4160	
tca ggc cgt atc tcc tac aac ttc ggg ctc gaa ggc cct gcg atc act	12582
Ser Gly Arg Ile Ser Tyr Asn Phe Gly Leu Glu Gly Pro Ala Ile Thr	
4165 4170 4175	
atc gac acc gcg tgt tcc tcc tcg ctc gtc gcc ctg cat ctg gcc tgc	12630
Ile Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys	
4180 4185 4190	
caa gcg ctc cgg tcc ggt gaa tgc acc atg gcg ctc gca ggc ggc gcc	12678
Gln Ala Leu Arg Ser Gly Glu Cys Thr Met Ala Leu Ala Gly Gly Ala	
4195 4200 4205	
tcc gtc atg gcc act ccc ttc gtc ttc acc gag ttc tct cgc cag cgg	12726
Ser Val Met Ala Thr Pro Phe Val Phe Thr Glu Phe Ser Arg Gln Arg	
4210 4215 4220	
ggc ctg gcc gca gac ggc cgg tgc aag gcg ttt tcg gcg gcg gcg gac	12774
Gly Leu Ala Ala Asp Gly Arg Cys Lys Ala Phe Ser Ala Ala Ala Asp	
4225 4230 4235 4240	
ggg acc ggc tgg tcc gag ggt gtg ggg atg ctg ctg gtg gag cgg ctc	12822
Gly Thr Gly Trp Ser Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu	
4245 4250 4255	
tcc gac gcc cgc cgc aac ggt cac cgt gtc ctg gcc gtc gtc cgc ggc	12870

Ser Asp Ala Arg Arg Asn Gly His Arg Val Leu Ala Val Val Arg Gly
 4260 4265 4270

agc gcc gtc aac cag gac ggc gca agc aac ggc ctg acc gca ccc aac 12918
 Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn
 4275 4280 4285

ggt cgt tca caa gtc aag gtc atc cgc cag gct ttg gcc aac gca cac 12966
 Gly Arg Ser Gln Val Lys Val Ile Arg Gln Ala Leu Ala Asn Ala His
 4290 4295 4300

ctc tcc cct gcc gat gtc gat gcg gtg gag gcc cac ggc acg ggg acc 13014
 Leu Ser Pro Ala Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr
 4305 4310 4315 4320

acc ctg ggc gac ccg atc gag gct caa gcc ctc gtc gaa gcc tac ggt 13062
 Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Val Glu Ala Tyr Gly
 4325 4330 4335

cag gac cgc ccc aac ggc cgc ccc ctc tgg ctc gga acc ctc aag tcc 13110
 Gln Asp Arg Pro Asn Gly Arg Pro Leu Trp Leu Gly Thr Leu Lys Ser
 4340 4345 4350

aac atc ggg cac tcc atg gcc gct gcg ggt gtg ggc ggg gtc atc aag 13158
 Asn Ile Gly His Ser Met Ala Ala Ala Gly Val Gly Gly Val Ile Lys
 4355 4360 4365

atg gtg atg gcg ctg cgg aat ggt ctg ctg ccg cgg acg ttg cat gtg 13206
 Met Val Met Ala Leu Arg Asn Gly Leu Leu Pro Arg Thr Leu His Val
 4370 4375 4380

gat gag ccg tcg ccg cat gtg gac tgg tcc gcg ggt gcg gtg cag ctg 13254
 Asp Glu Pro Ser Pro His Val Asp Trp Ser Ala Gly Ala Val Gln Leu
 4385 4390 4395 4400

ctg acg gag acg gtg ccc tgg ccc ggc ggg gag ggg cgg cta cgg cgg 13302
 Leu Thr Glu Thr Val Pro Trp Pro Gly Gly Glu Gly Arg Leu Arg Arg
 4405 4410 4415

00914286 082401

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4420 4425 4430	
ctc gag gaa gca ccc gcc cac aac atc ccg tca gac aca ccc gcc gac Leu Glu Glu Ala Pro Ala His Asn Ile Pro Ser Asp Thr Pro Ala Asp	13398
4435 4440 4445	
gac gtc ccg gga gaa tca gcc gcc gac gag gat gcc ggt agt ggc gat Asp Val Pro Gly Glu Ser Ala Ala Asp Glu Asp Ala Gly Ser Gly Asp	13446
4450 4455 4460	
gag gct gct gcc ggc agt cca ggg gtg tgg ccg tgg ctg gtg tcg gcc Glu Ala Ala Ala Gly Ser Pro Gly Val Trp Pro Trp Leu Val Ser Ala	13494
4465 4470 4475 4480	
aag tcg cag ccg gcc ctg cgc gcc cag gcc cag gcc ctg cac gcc cac Lys Ser Gln Pro Ala Leu Arg Ala Gln Ala Gln Ala Leu His Ala His	13542
4485 4490 4495	
ctc acc gac cac ccc ggc ctc gac ctc gcc gac gtc ggg tac acc ctc Leu Thr Asp His Pro Gly Leu Asp Leu Ala Asp Val Gly Tyr Thr Leu	13590
4500 4505 4510	
gcc cac gcc cgc gcc gtg ttc gac cac cgc gcc acc ctc atc gcc gcc Ala His Ala Arg Ala Val Phe Asp His Arg Ala Thr Leu Ile Ala Ala	13638
4515 4520 4525	
gac cgc gac acc ttc ctg caa gca ctc cag gca ctc gcc gca ggc gaa Asp Arg Asp Thr Phe Leu Gln Ala Leu Gln Ala Leu Ala Ala Gly Glu	13686
4530 4535 4540	
ccc cac ccc gcc gtc atc cac agc agc gcc cca ggc ggg acc ggg acc Pro His Pro Ala Val Ile His Ser Ser Ala Pro Gly Gly Thr Gly Thr	13734
4545 4550 4555 4560	
ggg gag gcc gca gga aag acc gca ttc atc tgc tcc gga cag ggc acc	13782

Gly Glu Ala Ala Gly Lys Thr Ala Phe Ile Cys Ser Gly Gln Gly Thr
 4565 4570 4575

caa cgc ccc ggc atg gcc cac ggc ctc tac cac acc cac ccc gtc ttc 13830
 Gln Arg Pro Gly Met Ala His Gly Leu Tyr His Thr His Pro Val Phe
 4580 4585 4590

gcc gcc gca ctc aac gac atc tgc acc cac ctc gac ccc cac ctc gac 13878
 Ala Ala Ala Leu Asn Asp Ile Cys Thr His Leu Asp Pro His Leu Asp
 4595 4600 4605

cac ccc ctc ctc ccc ctc ctc acc cag gac ccc aac acc cag gac acc 13926
 His Pro Leu Leu Pro Leu Leu Thr Gln Asp Pro Asn Thr Gln Asp Thr
 4610 4615 4620

acc acc ctc gaa gaa gcg gcc gca ctg ctc cag cag acc cgc tac gcc 13974
 Thr Thr Leu Glu Glu Ala Ala Ala Leu Leu Gln Gln Thr Arg Tyr Ala
 4625 4630 4635 4640

cag ccc gcc ctc ttc gcc ttc cag gtc gcc ctc cac cgc ctc ctc acc 14022
 Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu Thr
 4645 4650 4655

gac ggc tac cac atc acc ccc cac tac tac gcc gga cac tcc ctc ggc 14070
 Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu Gly
 4660 4665 4670

gaa atc acc gcc gcc cac ctc gcc ggc atc ctc acc ctc acc gac gcc 14118
 Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp Ala
 4675 4680 4685

acc acc ctc atc acc caa cgc gcc acc ctc atg caa acc atg ccc ccc 14166
 Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro Pro
 4690 4695 4700

ggc acc atg acc acc ctc cac acc acc ccc cac cac atc acc cac cac 14214
 Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile Thr His His
 4705 4710 4715 4720

091486

Leu Thr Leu Thr His Pro His His His Pro Gln Thr His Leu Leu Thr
 4865 4870 4875 4880

aac ctc gcc aaa acc acc acc acc tgg cac ccc cac cac tac acc cac 14742
 Asn Leu Ala Lys Thr Thr Thr Thr Trp His Pro His His Tyr Thr His
 4885 4890 4895

cac cac aac caa ccc cac acc cac acc cac ctc gac ctc ccc acc tac 14790
 His His Asn Gln Pro His Thr His Thr His Leu Asp Leu Pro Thr Tyr
 4900 4905 4910

ccc ttc caa cac cac cac tac tgg ctc caa cca ccc ggc aag ccg agc 14838
 Pro Phe Gln His His His Tyr Trp Leu Gln Pro Pro Gly Lys Pro Ser
 4915 4920 4925

gac ccg tca ccg agc gaa ggc cgt gag caa gcc acg acc cca tca acc 14886
 Asp Pro Ser Pro Ser Glu Gly Arg Glu Gln Ala Thr Thr Pro Ser Thr
 4930 4935 4940

ccg ctg cgt gat gtc ctc gtg ggc aag tct ccg cag gag cga gac gaa 14934
 Pro Leu Arg Asp Val Leu Val Gly Lys Ser Pro Gln Glu Arg Asp Glu
 4945 4950 4955 4960

gag ctg ttg cgc ctg gtg cgc acc cat gcg gcc gct gtg ctg ggc cat 14982
 Glu Leu Leu Arg Leu Val Arg Thr His Ala Ala Ala Val Leu Gly His
 4965 4970 4975

gcc act ccc gaa gtg atc gtt ccg aac aag gcc ttc aaa gag ctg ggt 15030
 Ala Thr Pro Glu Val Ile Val Pro Asn Lys Ala Phe Lys Glu Leu Gly
 4980 4985 4990

ttt gat tct ctc gcc gca att cag ctt cgt aat cga ctg ctt gct gac 15078
 Phe Asp Ser Leu Ala Ala Ile Gln Leu Arg Asn Arg Leu Leu Ala Asp
 4995 5000 5005

gtt gac ctg ccg ctt ccg gcc acg ctg atc ttc gat tac ccc act ccg 15126
 Val Asp Leu Pro Leu Pro Ala Thr Leu Ile Phe Asp Tyr Pro Thr Pro
 5010 5015 5020

atg gcg ctt tgc cag ttc ctc cgg gcg gcg atc gtc gga gcg gac aca	15174
Met Ala Leu Cys Gln Phe Leu Arg Ala Ala Ile Val Gly Ala Asp Thr	
5025 5030 5035 5040	
ggc acg acc act cgt ctg ccg cta act gcg gtc ccc gcc gac gag ccg	15222
Gly Thr Thr Thr Arg Leu Pro Leu Thr Ala Val Pro Ala Asp Glu Pro	
5045 5050 5055	
atc gcc atc gtc ggc atg gcc tgt cgg tac ccc ggt gat gta cgg acg	15270
Ile Ala Ile Val Gly Met Ala Cys Arg Tyr Pro Gly Asp Val Arg Thr	
5060 5065 5070	
gtc gat gat ctc tgg cag gtg gtc agt ggt ggc cat gac gcg atc ggc	15318
Val Asp Asp Leu Trp Gln Val Val Ser Gly Gly His Asp Ala Ile Gly	
5075 5080 5085	
gga ttc ccg acg aac cgt ggg tgg gac ctc gac acg ctg tac aac ccg	15366
Gly Phe Pro Thr Asn Arg Gly Trp Asp Leu Asp Thr Leu Tyr Asn Pro	
5090 5095 5100	
gac ccg gac cac cac gga acc agc tac acc cgg agc ggc gga ttc ctt	15414
Asp Pro Asp His His Gly Thr Ser Tyr Thr Arg Ser Gly Gly Phe Leu	
5105 5110 5115 5120	
tac gac gca ggc aat ttc gat ccc gac ttc ttc ggt atc agt ccg cgt	15462
Tyr Asp Ala Gly Asn Phe Asp Pro Asp Phe Phe Gly Ile Ser Pro Arg	
5125 5130 5135	
gag gca ctg gcg atg gac ccg cag cag cgg ctg ctg ctg gaa aca gcg	15510
Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ala	
5140 5145 5150	
tgg gag agc atc gaa cac gcc tgc atc aac ccc gac agc ctc cgt ggc	15558
Trp Glu Ser Ile Glu His Ala Cys Ile Asn Pro Asp Ser Leu Arg Gly	
5155 5160 5165	
aca cca acc ggc gtc ttc gcc ggg ctg acc tac cac gac tac gcc gcg	15606

Thr Pro Thr Gly Val Phe Ala Gly Leu Thr Tyr His Asp Tyr Ala Ala
 5170 5175 5180

cgc ttt ccc aca gct ccg gca ggg ttc gag ggg tat ctc ggg cac gga 15654
 Arg Phe Pro Thr Ala Pro Ala Gly Phe Glu Gly Tyr Leu Gly His Gly
 5185 5190 5195 5200

agc gca ggc agt atc gcc tcg ggt cgt gtc gcc tac gct ctc ggc ctg 15702
 Ser Ala Gly Ser Ile Ala Ser Gly Arg Val Ala Tyr Ala Leu Gly Leu
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gaa ggt ccg gcc ctc aca gtc gac act gcc tgc tct tcg tcc ctg gtc 15750
 Glu Gly Pro Ala Leu Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val
 5220 5225 5230

gct ctg cac ctg gcc tgt cag gcg ctg cgg tcc ggc gag tgt tcc atg 15798
 Ala Leu His Leu Ala Cys Gln Ala Leu Arg Ser Gly Glu Cys Ser Met
 5235 5240 5245

gcc ctc gcg ggt ggc gtc acg gtg atg tca acc ccg gcc ggg ttc gtg 15846
 Ala Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Ala Gly Phe Val
 5250 5255 5260

gag ttt tcg cgg cag ccg ggc ctg gcc gtg gac ggg ccg tgc aag gcg 15894
 Glu Phe Ser Arg Gln Arg Gly Leu Ala Val Asp Gly Arg Cys Lys Ala
 5265 5270 5275 5280

ttc tcg gca gcg gct gac ggc acc ggc tgg ggt gag ggt gtc gga atg 15942
 Phe Ser Ala Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Val Gly Met
 5285 5290 5295

ctg ctg gtg gag ccg ctg tcg gac gcg ccg ccg ctc ggt cac cga atc 15990
 Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Leu Gly His Arg Ile
 5300 5305 5310

ctc gcg gtg gtg cgt ggc agt gcg gtc aat cag gac ggt gcg agc aac 16038
 Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn
 5315 5320 5325

ggg ctg acg gcg ccc aac ggg ccg tcc cag gag cgt gtc atc cgc ctg 16086
 Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Glu Arg Val Ile Arg Leu
 5330 5335 5340

gcc ctg gcc aac gcg gac ctg acc ccc gcc gac gtc gat gcg gtg gag 16134
 Ala Leu Ala Asn Ala Asp Leu Thr Pro Ala Asp Val Asp Ala Val Glu
 5345 5350 5355 5360

gcc cac ggc acc ggc acc act ttg ggc gac ccg atc gag gcc cag gcc 16182
 Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala
 5365 5370 5375

ctc ctc gcc acc tac gga cag gac cgc ccc ggc aac gaa ccg ctg tgg 16230
 Leu Leu Ala Thr Tyr Gly Gln Asp Arg Pro Gly Asn Glu Pro Leu Trp
 5380 5385 5390

ctg ggc tcg atg aag tcg aac atc ggc cac gcg cag gct gcc gca ggt 16278
 Leu Gly Ser Met Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ala Gly
 5395 5400 5405

gtg ggc ggg gtc atc aag atg gtg atg gcg ctg cgg aat ggt ctg ctg 16326
 Val Gly Gly Val Ile Lys Met Val Met Ala Leu Arg Asn Gly Leu Leu
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ccg cgg acg ttg cat gtg gat gag ccg tcg ccg cat gtg gac tgg tcc 16374
 Pro Arg Thr Leu His Val Asp Glu Pro Ser Pro His Val Asp Trp Ser
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gcg ggg gcg gtg cag ctg ctg acg gag acg gtg ccc tgg ccc ggc ggg 16422
 Ala Gly Ala Val Gln Leu Leu Thr Glu Thr Val Pro Trp Pro Gly Gly
 5445 5450 5455

gag ggg cgg ctg cgg cgg gca gga gtg tca tcg ttc ggc gtc agc ggc 16470
 Glu Gly Arg Leu Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly
 5460 5465 5470

acc aac gcc cac gtc atc ctc gaa gaa gca ccc gcc cac aac atc ccg 16518

Thr Asn Ala His Val Ile Leu Glu Glu Ala Pro Ala His Asn Ile Pro
 5475 5480 5485

tca gac aca ccc gcc gac gac gcc ccg gga gaa gca gcc gcc gac gat 16566
 Ser Asp Thr Pro Ala Asp Asp Ala Pro Gly Glu Ala Ala Ala Asp Asp
 5490 5495 5500

gtt ccg ggg gaa gcg gcc ggc gac gac gcc ggt acc ggc ggg gaa gcg 16614
 Val Pro Gly Glu Ala Ala Gly Asp Asp Ala Gly Thr Gly Gly Glu Ala
 5505 5510 5515 5520

act ggt cct gct gcc ggc agt cca ggg gtg tgg ccg tgg ctg gtg tcg 16662
 Thr Gly Pro Ala Ala Gly Ser Pro Gly Val Trp Pro Trp Leu Val Ser
 5525 5530 5535

gcc aag tcg cag ccg gcc ctg cgc gcc cag gcc cag gcc ctg cac gcc 16710
 Ala Lys Ser Gln Pro Ala Leu Arg Ala Gln Ala Gln Ala Leu His Ala
 5540 5545 5550

cac ctc acc gac cac ccc ggc ctc gac ctc gcc gac gtc ggg tac acc 16758
 His Leu Thr Asp His Pro Gly Leu Asp Leu Ala Asp Val Gly Tyr Thr
 5555 5560 5565

ctc gcc cac gcc cgc gcc gtg ttc gac cac cgc gcc acc ctc atc gcc 16806
 Leu Ala His Ala Arg Ala Val Phe Asp His Arg Ala Thr Leu Ile Ala
 5570 5575 5580

gcc gac cgc gac acc ttc ctg caa gca ctc cag gca ctc gcc gca ggc 16854
 Ala Asp Arg Asp Thr Phe Leu Gln Ala Leu Gln Ala Leu Ala Ala Gly
 5585 5590 5595 5600

gaa ccc cac ccc gcc gtc atc cac agc agc gcc cca ggc ggg acc ggg 16902
 Glu Pro His Pro Ala Val Ile His Ser Ser Ala Pro Gly Gly Thr Gly
 5605 5610 5615

acc ggg gag gcc gca gga aag acc gca ttc atc tgc tcc gga cag ggc 16950
 Thr Gly Glu Ala Ala Gly Lys Thr Ala Phe Ile Cys Ser Gly Gln Gly
 5620 5625 5630

acc caa cgc ccc ggc atg gcc cac ggc ctc tac cac acc cac ccc gtc 16998
 Thr Gln Arg Pro Gly Met Ala His Gly Leu Tyr His Thr His Pro Val
 5635 5640 5645

ttc gcc gcc gca ctc aac gac atc tgc acc cac ctc gac ccc cac ctc 17046
 Phe Ala Ala Ala Leu Asn Asp Ile Cys Thr His Leu Asp Pro His Leu
 5650 5655 5660

gac cac ccc ctc ctc ccc ctc ctc acc cag gac ccc aac acc cag gac 17094
 Asp His Pro Leu Leu Pro Leu Leu Thr Gln Asp Pro Asn Thr Gln Asp
 5665 5670 5675 5680

acc acc acc ctc gaa gaa gcg gcc gca ctg ctc cag cag acc ccg tac 17142
 Thr Thr Thr Leu Glu Glu Ala Ala Ala Leu Leu Gln Gln Thr Pro Tyr
 5685 5690 5695

gcc cag ccc gcc ctc ttc gcc ttc cag gtc gcc ctc cac cgc ctc ctc 17190
 Ala Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu
 5700 5705 5710

acc gac ggc tac cac atc acc ccc cac tac tac gcc gga cac tcc ctc 17238
 Thr Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu
 5715 5720 5725

ggc gaa atc acc gcc gcc cac ctc gcc ggc atc ctc acc ctc acc gac 17286
 Gly Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp
 5730 5735 5740

gcc acc acc ctc atc acc caa cgc gcc acc ctc atg caa acc atg ccc 17334
 Ala Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro
 5745 5750 5755 5760

ccc ggc acc atg acc acc ctc cac acc acc ccc cac cac atc acc cac 17382
 Pro Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile Thr His
 5765 5770 5775

cac ctc acc gcc cac gaa aac gac ctc gcc atc gcc gcc atc aac acc 17430

His Leu Thr Ala His Glu Asn Asp Leu Ala Ile Ala Ala Ile Asn Thr
 5780 5785 5790

ccc acc tcc ctc gtc atc agc ggc acc ccc cac acc gtc caa cac atc 17478
 Pro Thr Ser Leu Val Ile Ser Gly Thr Pro His Thr Val Gln His Ile
 5795 5800 5805

acc acc ctc tgc caa caa caa ggc atc aaa acc aaa acc ctc ccc acc 17526
 Thr Thr Leu Cys Gln Gln Gln Gly Ile Lys Thr Lys Thr Leu Pro Thr
 5810 5815 5820

aaa aac gcc ttc cac tcc ccc cac acc aac ccc atc ctc aac caa ctc 17574
 Lys Asn Ala Phe His Ser Pro His Thr Asn Pro Ile Leu Asn Gln Leu
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cac cag cac acc caa acc ctc acc tac cac cca ccc cac acc ccc ctc 17622
 His Gln His Thr Gln Thr Leu Thr Tyr His Pro Pro His Thr Pro Leu
 5845 5850 5855

atc acc gcc aac acc cca ccc gac caa ctc ctc acc ccc cac tac tgg 17670
 Ile Thr Ala Asn Thr Pro Pro Asp Gln Leu Leu Thr Pro His Tyr Trp
 5860 5865 5870

acc caa caa gcc cgc aac acc gtc gac tac gcc acc acc acc caa acc 17718
 Thr Gln Gln Ala Arg Asn Thr Val Asp Tyr Ala Thr Thr Thr Gln Thr
 5875 5880 5885

ctc cac caa cac ggc gtc acc acc tac atc gaa ctc gga ccc gac aac 17766
 Leu His Gln His Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro Asp Asn
 5890 5895 5900

acc ctc acc acc ctc acc cac cac aac ctc ccc aac acc ccc acc acc 17814
 Thr Leu Thr Thr Leu Thr His His Asn Leu Pro Asn Thr Pro Thr Thr
 5905 5910 5915 5920

acc ctc acc ctc acc cac ccc cac cac ccc caa acc cac ctc ctc 17862
 Thr Leu Thr Leu Thr His Pro His His His Pro Gln Thr His Leu Leu
 5925 5930 5935

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acc aac ctc gcc aaa acc acc acc acc tgg cac ccc cac cac tac acc	17910
Thr Asn Leu Ala Lys Thr Thr Thr Thr Trp His Pro His His Tyr Thr	
5940 5945 5950	
cac cac cac aac caa ccc cac acc cac acc cac ctc gac ctc ccc acc	17958
His His His Asn Gln Pro His Thr His Thr His Leu Asp Leu Pro Thr	
5955 5960 5965	
tac ccc ttc caa cac cag cac tac tgg ctc gaa agc aca cag ccg ggt	18006
Tyr Pro Phe Gln His Gln His Tyr Trp Leu Glu Ser Thr Gln Pro Gly	
5970 5975 5980	
gcc gga tcc ggt tcc ggt tcc ggt tcc ggg cgg gca ggg act gcg ggc	18054
Ala Gly Ser Gly Ser Gly Ser Gly Ser Gly Arg Ala Gly Thr Ala Gly	
5985 5990 5995 6000	
ggg acg gca gag gtg gag tcc cgg ttc tgg gac gcg gtg gcc cgc cag	18102
Gly Thr Ala Glu Val Glu Ser Arg Phe Trp Asp Ala Val Ala Arg Gln	
6005 6010 6015	
gac ctg gaa acg gtc gcg acc acg ctc gcc gtg ccc ccc tcc gcc ggc	18150
Asp Leu Glu Thr Val Ala Thr Thr Leu Ala Val Pro Pro Ser Ala Gly	
6020 6025 6030	
ctg gac acg gtg gtg ccc gca ctc tcc gcc tgg cac cgc cac caa cac	18198
Leu Asp Thr Val Val Pro Ala Leu Ser Ala Trp His Arg His Gln His	
6035 6040 6045	
gac caa gcc cgc atc aac acc tgg acc tac cag gaa acc tgg aaa ccc	18246
Asp Gln Ala Arg Ile Asn Thr Trp Thr Tyr Gln Glu Thr Trp Lys Pro	
6050 6055 6060	
ctc acc ctc ccc acc acc cac caa ccc cac caa acc tgg ctc atc gcc	18294
Leu Thr Leu Pro Thr Thr His Gln Pro His Gln Thr Trp Leu Ile Ala	
6065 6070 6075 6080	
atc ccc gaa acc cag acc cac cac ccc cac atc acc aac atc ctc acc	18342

Ile Pro Glu Thr Gln Thr His His Pro His Ile Thr Asn Ile Leu Thr
6085 6090 6095

aac ctc cac cac cac ggc atc acc ccc atc ccc ctc acc ctc aac cac 18390
Asn Leu His His His Gly Ile Thr Pro Ile Pro Leu Thr Leu Asn His
6100 6105 6110

acc cac acc aac ccc caa cac ctc cac cac acc cga caa caa gcc caa 18438
Thr His Thr Asn Pro Gln His Leu His His Thr Arg Gln Gln Ala Gln
6115 6120 6125

aac cac acc acc gga ccc atc acc ggc ctg ctc tcc ctc ctc gcc ctc 18486
Asn His Thr Thr Gly Pro Ile Thr Gly Leu Leu Ser Leu Leu Ala Leu
6130 6135 6140

gac gaa aca ccc cac ccc cac cac ccc cac aca ccc acc ggc acc ctc 18534
Asp Glu Thr Pro His Pro His His Pro His Thr Pro Thr Gly Thr Leu
6145 6150 6155 6160

ctc aac ctc acc ctc acc caa acc cac acc caa acc cac cca cca acc 18582
Leu Asn Leu Thr Leu Thr Gln Thr His Thr Gln Thr His Pro Pro Thr
6165 6170 6175

ccc ctc tgg tac gcc acc acc aac gcc acc acc acc cac ccc aac gac 18630
Pro Leu Trp Tyr Ala Thr Thr Asn Ala Thr Thr Thr His Pro Asn Asp
6180 6185 6190

ccc ctc aca cac ccc acc caa gcc caa acc tgg gga ctc gcc cgc acc 18678
Pro Leu Thr His Pro Thr Gln Ala Gln Thr Trp Gly Leu Ala Arg Thr
6195 6200 6205

acc ctc ctc gaa cac ccc acc cac acc gcc gga atc atc gac ctc ccc 18726
Thr Leu Leu Glu His Pro Thr His Thr Ala Gly Ile Ile Asp Leu Pro
6210 6215 6220

acc acc ccc acc ccc cac acc ctc cac cac ctc acc caa acc ctc acc 18774
Thr Thr Pro Thr Pro His Thr Leu His His Leu Thr Gln Thr Leu Thr
6225 6230 6235 6240

caa ccc cac cac caa acc caa ctc gcc atc cgc acc acc ggc acc cac 18822
 Gln Pro His His Gln Thr Gln Leu Ala Ile Arg Thr Thr Gly Thr His
 6245 6250 6255

acc cgc cgc ctc acc ccc acc acc ctc acc ccc aca cac caa cca ccc 18870
 Thr Arg Arg Leu Thr Pro Thr Thr Leu Thr Pro Thr His Gln Pro Pro
 6260 6265 6270

acc ccc acc ccc cac gga acc acc ctc atc acc ggc gga acc ggc gcc 18918
 Thr Pro Thr Pro His Gly Thr Thr Leu Ile Thr Gly Gly Thr Gly Ala
 6275 6280 6285

ctc gcc acc cac ctc acc cac cac ctc acc acc cac caa ccc acc caa 18966
 Leu Ala Thr His Leu Thr His His Leu Thr Thr His Gln Pro Thr Gln
 6290 6295 6300

cac ctc ctc ctc acc agc cga acc ggc ccc cac acc ccc cac gca caa 19014
 His Leu Leu Leu Thr Ser Arg Thr Gly Pro His Thr Pro His Ala Gln
 6305 6310 6315 6320

cac ctc acc acc caa ctc caa caa aaa ggc atc cac ctc acc atc acc 19062
 His Leu Thr Thr Gln Leu Gln Gln Lys Gly Ile His Leu Thr Ile Thr
 6325 6330 6335

acc tgc gac acc agc aac cca gac caa ctc caa caa ctc ctc aac acc 19110
 Thr Cys Asp Thr Ser Asn Pro Asp Gln Leu Gln Gln Leu Leu Asn Thr
 6340 6345 6350

atc ccc cca caa cac ccc ctc acc acc gtc atc cac acc gca ggc atc 19158
 Ile Pro Pro Gln His Pro Leu Thr Thr Val Ile His Thr Ala Gly Ile
 6355 6360 6365

ctc gac gac gcc acc ctc acc aac ctc acc ccc acc caa ctc aac aac 19206
 Leu Asp Asp Ala Thr Leu Thr Asn Leu Thr Pro Thr Gln Leu Asn Asn
 6370 6375 6380

gtc ctc cgc gcc aaa gcc cac agc gcc cac ctc ctc cac caa ctc acc 19254

Val Leu Arg Ala Lys Ala His Ser Ala His Leu Leu His Gln Leu Thr
 6385 6390 6395 6400

caa cac acc ccc ctc aac gcc ttc gtc ctc tac tcc tcc gcc gcc gcc 19302
 Gln His Thr Pro Leu Asn Ala Phe Val Leu Tyr Ser Ser Ala Ala Ala
 6405 6410 6415

acc ttc ggc gca ccc ggc caa gcc aac tac gcc gca gcc aac gcc tac 19350
 Thr Phe Gly Ala Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Tyr
 6420 6425 6430

ctc gac gcc ctc gcc cac cac cgc cac acc cac cac ctc ccc gcc acc 19398
 Leu Asp Ala Leu Ala His His Arg His Thr His His Leu Pro Ala Thr
 6435 6440 6445

agc atc gcc tgg ggc acc tgg caa gga aac gga ctg gcg act ggt caa 19446
 Ser Ile Ala Trp Gly Thr Trp Gln Gly Asn Gly Leu Ala Thr Gly Gln
 6450 6455 6460

gtc agc gaa cat ctc cgc cgc cgc ggg atg ttc gcc atg ccg ccc gag 19494
 Val Ser Glu His Leu Arg Arg Arg Gly Met Phe Ala Met Pro Pro Glu
 6465 6470 6475 6480

ttg gcg gtc aca gct gtt gac ggc gcg atc gcg agc ggg cgc ccg agt 19542
 Leu Ala Val Thr Ala Val Asp Gly Ala Ile Ala Ser Gly Arg Pro Ser
 6485 6490 6495

ctc ctc gtc gcc gat atc gac tgg aag aaa ttg gga ccg gtt ctc tcc 19590
 Leu Leu Val Ala Asp Ile Asp Trp Lys Lys Leu Gly Pro Val Leu Ser
 6500 6505 6510

agc aag tcg tcg gtc ttg ctc gag gac ctt ccc cag gca cag gga act 19638
 Ser Lys Ser Ser Val Leu Leu Glu Asp Leu Pro Gln Ala Gln Gly Thr
 6515 6520 6525

gag gag gcg cgc agt acc gtt gag cag acg gag agc aca aac ctc cgg 19686
 Glu Glu Ala Arg Ser Thr Val Glu Gln Thr Glu Ser Thr Asn Leu Arg
 6530 6535 6540

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caa ctc ctc atg ggt cgg tca cgt tcc gag cag gaa gaa gag ctg ctc	19734
Gln Leu Leu Met Gly Arg Ser Arg Ser Glu Gln Glu Glu Leu Leu	
6545 6550 6555 6560	
agc ctc gtc cgc atc cac tcc gcg gca gtg ctc ggg cgc gac gac tcc	19782
Ser Leu Val Arg Ile His Ser Ala Ala Val Leu Gly Arg Asp Asp Ser	
6565 6570 6575	
gag gcc atc ccg ccc ggt cgg ctg ttc agg gat cta ggg ttc gac tcg	19830
Glu Ala Ile Pro Pro Gly Arg Leu Phe Arg Asp Leu Gly Phe Asp Ser	
6580 6585 6590	
ctt gcg gcg gtg gag ctt cgc aac cac ctc gca gca cag acg gag ctg	19878
Leu Ala Ala Val Glu Leu Arg Asn His Leu Ala Ala Gln Thr Glu Leu	
6595 6600 6605	
gct ctg ccg acg act ctc gtc ttc gat tac ccc agc ccc acc aag ctc	19926
Ala Leu Pro Thr Thr Leu Val Phe Asp Tyr Pro Ser Pro Thr Lys Leu	
6610 6615 6620	
gcc caa ttt ctg ctc tcc gag atc gcg gag ttc cag ccc gac aac tca	19974
Ala Gln Phe Leu Leu Ser Glu Ile Ala Glu Phe Gln Pro Asp Asn Ser	
6625 6630 6635 6640	
act ccg ctt ccg cga ccc cgg gca gag ctc gat gag ccg atc gcc atc	20022
Thr Pro Leu Pro Arg Pro Arg Ala Glu Leu Asp Glu Pro Ile Ala Ile	
6645 6650 6655	
gtt ggc atg gcc tgt cgc ttc ccc ggc gga gtg acc tcg gcg gac gac	20070
Val Gly Met Ala Cys Arg Phe Pro Gly Gly Val Thr Ser Ala Asp Asp	
6660 6665 6670	
ttc tgg gat ctg atc tcc tcc gag cag gac gcg atc ggc gga ttc ccc	20118
Phe Trp Asp Leu Ile Ser Ser Glu Gln Asp Ala Ile Gly Gly Phe Pro	
6675 6680 6685	
acc gac cgc ggc tgg gac ctg gac acg ctc tac gac ccc gac ccc gac	20166

Thr Asp Arg Gly Trp Asp Leu Asp Thr Leu Tyr Asp Pro Asp Pro Asp
 6690 6695 6700

cac ccc ggc acc tgc tac acc cga aac ggc gga ttc ctc tac gac gca 20214
 His Pro Gly Thr Cys Tyr Thr Arg Asn Gly Gly Phe Leu Tyr Asp Ala
 6705 6710 6715 6720

ggc cac ttc gac gcc gaa ttc ttc ggc atc agc ccc cgc gaa gcc ctc 20262
 Gly His Phe Asp Ala Glu Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
 6725 6730 6735

gcc atg gac ccc cag caa cga ctc ctc ctc gaa acc gcc tgg gaa acc 20310
 Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ala Trp Glu Thr
 6740 6745 6750

atc gaa cac gcc ggc atc aac ccc cac acc ctc cac ggc acc ccc acc 20358
 Ile Glu His Ala Gly Ile Asn Pro His Thr Leu His Gly Thr Pro Thr
 6755 6760 6765

gga gtc ttc acc ggc acc aac gga cag gac cac gcg gca cac atc cgt 20406
 Gly Val Phe Thr Gly Thr Asn Gly Gln Asp His Ala Ala His Ile Arg
 6770 6775 6780

cag gcc ccg agc ggt acc gag gga ttc gtc ctg acc ggg gca gcc acc 20454
 Gln Ala Pro Ser Gly Thr Glu Gly Phe Val Leu Thr Gly Ala Ala Thr
 6785 6790 6795 6800

agc atc gcc tcc ggc cga atc tcc tac atc ctc ggg ttg gaa ggg cct 20502
 Ser Ile Ala Ser Gly Arg Ile Ser Tyr Ile Leu Gly Leu Glu Gly Pro
 6805 6810 6815

gcg gtc acc ctc gac aca gcg tgt tcc tcc tcg ctc gtc gcc ctg cac 20550
 Ala Val Thr Leu Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His
 6820 6825 6830

ctc gcc tgc cag tcc ctc agg tcc ggt gaa tgc acc atg gcc ttg gcc 20598
 Leu Ala Cys Gln Ser Leu Arg Ser Gly Glu Cys Thr Met Ala Leu Ala
 6835 6840 6845

ggc ggg gcc acg gtc atg acc acc ccg atc acc ttc acc gaa ttc gcc 20646
 Gly Gly Ala Thr Val Met Thr Thr Pro Ile Thr Phe Thr Glu Phe Ala
 6850 6855 6860

cgc caa cgc gga ctc gcc ccc gac ggg cgt tgc aag gcg ttc tcg gcg 20694
 Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Cys Lys Ala Phe Ser Ala
 6865 6870 6875 6880

gcg gct gac ggt acc ggc tgg ggt gag ggt gtg ggg atg ctg ctg gtg 20742
 Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Val Gly Met Leu Leu Val
 6885 6890 6895

gag cgg ctc tcc gac gcc cgc cgc aac ggt cac cgt gtc ctg gcc gtg 20790
 Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly His Arg Val Leu Ala Val
 6900 6905 6910

gtg cgt ggc agt gcg gtc aac cag gac ggt gcg agc aac ggt ctg acc 20838
 Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr
 6915 6920 6925

gcg ccc aac ggg ccc tcc cag cag cgc gtc atc cgc cag gcc ctc gcc 20886
 Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala
 6930 6935 6940

aac gcg gac ctg acc ccc gcc gac gtc gat gcg gtg gag gcc cac ggc 20934
 Asn Ala Asp Leu Thr Pro Ala Asp Val Asp Ala Val Glu Ala His Gly
 6945 6950 6955 6960

acc ggc acc act ttg ggc gac ccg atc gag gcc cag gcc atc ctc gcg 20982
 Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Ile Leu Ala
 6965 6970 6975

acc tac gga cag gac cgt ccc ggc aac ggg ccg ttg tgg ctg ggc tcc 21030
 Thr Tyr Gly Gln Asp Arg Pro Gly Asn Gly Pro Leu Trp Leu Gly Ser
 6980 6985 6990

gtc aag tcc aac gtc gga cac aca cag gcc gcg gcg ggc gtg gcc gga 21078

Val Lys Ser Asn Val Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly
 6995 7000 7005

gtg atc aag atg gtg atg gcc ctc cgc cac cgg aca ctc cca ccg act 21126
 Val Ile Lys Met Val Met Ala Leu Arg His Arg Thr Leu Pro Pro Thr
 7010 7015 7020

ctc cac gcg gat gag ccg tcg ccg cat gtg gac tgg tcc gcg ggt gcg 21174
 Leu His Ala Asp Glu Pro Ser Pro His Val Asp Trp Ser Ala Gly Ala
 7025 7030 7035 7040

gtg cag ctg ctg acg gag acg gtg ccc tgg ccc ggc ggg gag ggg ccg 21222
 Val Gln Leu Leu Thr Glu Thr Val Pro Trp Pro Gly Gly Glu Gly Arg
 7045 7050 7055

ccg cgg cgg gca gga gtg tca tca ttc ggc gtc agc ggc acc aac gcc 21270
 Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala
 7060 7065 7070

cac gtc atc ctc gaa gaa gca ccc gcc gac gac gtt ccg ggg gga cca 21318
 His Val Ile Leu Glu Glu Ala Pro Ala Asp Asp Val Pro Gly Gly Pro
 7075 7080 7085

ccc gcc gac gag gat gcc ggt agt ggc gag gag gct gct gcc ggc agt 21366
 Pro Ala Asp Glu Asp Ala Gly Ser Gly Glu Glu Ala Ala Ala Gly Ser
 7090 7095 7100

cct ggg gtg tgg ccg tgg ctg gtg tcg gcc aag tcg cag ccg gcc ctg 21414
 Pro Gly Val Trp Pro Trp Leu Val Ser Ala Lys Ser Gln Pro Ala Leu
 7105 7110 7115 7120

cgc gcc cag gcc cag gcc ctg cac gcc cac ctc acc gac cac ccc ggc 21462
 Arg Ala Gln Ala Gln Ala Leu His Ala His Leu Thr Asp His Pro Gly
 7125 7130 7135

ctc gac ctc gcc gac gtc gga tac acc ctc gcc cac gcc cgc gcc gtg 21510
 Leu Asp Leu Ala Asp Val Gly Tyr Thr Leu Ala His Ala Arg Ala Val
 7140 7145 7150

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ttc gac cac cgc gcc acc ctc atc gcc gcc gac cgc gac acc ttc ctg 21558
Phe Asp His Arg Ala Thr Leu Ile Ala Ala Asp Arg Asp Thr Phe Leu
7155 7160 7165

caa gca ctc cag gca ctc gcc gca ggc gaa ccc cac ccc gcc gtc atc 21606
Gln Ala Leu Gln Ala Leu Ala Ala Gly Glu Pro His Pro Ala Val Ile
7170 7175 7180

cac agc agc gcc cca ggc ggg acc ggg acc ggg gag gcc gca gga aag 21654
His Ser Ser Ala Pro Gly Gly Thr Gly Thr Gly Glu Ala Ala Gly Lys
7185 7190 7195 7200

acc gca ttc atc tgc tcc gga cag ggc acc caa cgc ccc ggc atg gcc 21702
Thr Ala Phe Ile Cys Ser Gly Gln Gly Thr Gln Arg Pro Gly Met Ala
7205 7210 7215

cac ggc ctc tac cac acc cac ccc gtc ttc gcc gcc gca ctc aac gac 21750
His Gly Leu Tyr His Thr His Pro Val Phe Ala Ala Ala Leu Asn Asp
7220 7225 7230

atc tgc acc cac ctc gac ccc cac ctc gac cac ccc ctc ctc ccc ctc 21798
Ile Cys Thr His Leu Asp Pro His Leu Asp His Pro Leu Leu Pro Leu
7235 7240 7245

ctc acc caa aac gac aac gac aac gac aac gag gac gcg gcc gca ctg 21846
Leu Thr Gln Asn Asp Asn Asp Asn Asp Asn Glu Asp Ala Ala Ala Leu
7250 7255 7260

ctc cag cag acc ccg tac gcc cag ccc gcc ctc ttc gcc ttc cag gtc 21894
Leu Gln Gln Thr Pro Tyr Ala Gln Pro Ala Leu Phe Ala Phe Gln Val
7265 7270 7275 7280

gcc ctc cac cgc ctc ctc acc gac ggc tac cac atc acc ccc cac tac 21942
Ala Leu His Arg Leu Leu Thr Asp Gly Tyr His Ile Thr Pro His Tyr
7285 7290 7295

tac gcc gga cac tcc ctc ggc gaa atc acc gcc gcc cac ctc gcc ggc 21990

Tyr Ala Gly His Ser Leu Gly Glu Ile Thr Ala Ala His Leu Ala Gly
 7300 7305 7310

atc ctc acc ctc acc gac gcc acc acc ctc atc acc caa cgc gcc acc 22038
 Ile Leu Thr Leu Thr Asp Ala Thr Thr Leu Ile Thr Gln Arg Ala Thr
 7315 7320 7325

ctc atg caa acc atg ccc ccc ggc acc atg acc acc ctc cac acc acc 22086
 Leu Met Gln Thr Met Pro Pro Gly Thr Met Thr Thr Leu His Thr Thr
 7330 7335 7340

cca cac cac atc acc cac cac ctc acc gcc cac gaa aac gac ctc gcc 22134
 Pro His His Ile Thr His His Leu Thr Ala His Glu Asn Asp Leu Ala
 7345 7350 7355 7360

atc gcc gcc atc aac acc ccc acc tcc ctc gtc atc agc ggc acc ccc 22182
 Ile Ala Ala Ile Asn Thr Pro Thr Ser Leu Val Ile Ser Gly Thr Pro
 7365 7370 7375

cac acc gtc caa cac atc acc acc ctc tgc caa caa caa ggc atc aaa 22230
 His Thr Val Gln His Ile Thr Thr Leu Cys Gln Gln Gln Gly Ile Lys
 7380 7385 7390

acc aaa acc ctc ccc acc aac cac gcc ttc cac tcc ccc cac acc aac 22278
 Thr Lys Thr Leu Pro Thr Asn His Ala Phe His Ser Pro His Thr Asn
 7395 7400 7405

ccc atc ctc aac caa ctc cac cag cac acc caa acc ctc acc tac cac 22326
 Pro Ile Leu Asn Gln Leu His Gln His Thr Gln Thr Leu Thr Tyr His
 7410 7415 7420

cca ccc cac acc ccc ctc atc acc gcc aac acc cca ccc gac caa ctc 22374
 Pro Pro His Thr Pro Leu Ile Thr Ala Asn Thr Pro Pro Asp Gln Leu
 7425 7430 7435 7440

ctc acc ccc cac tac tgg acc caa caa gcc cgc aac acc gtc gac tac 22422
 Leu Thr Pro His Tyr Trp Thr Gln Gln Ala Arg Asn Thr Val Asp Tyr
 7445 7450 7455

gcc acc acc acc caa acc ctc cac caa cac ggc gtc acc acc tac atc 22470
Ala Thr Thr Thr Gln Thr Leu His Gln His Gly Val Thr Thr Tyr Ile
7460 7465 7470

gaa ctc gga ccc gac aac acc ctc acc acc ctc acc cac cac aac ctc 22518
Glu Leu Gly Pro Asp Asn Thr Leu Thr Thr Leu Thr His His Asn Leu
7475 7480 7485

ccc aac acc ccc acc acc acc ctc acc ctc acc cac ccc cac cac cac 22566
Pro Asn Thr Pro Thr Thr Thr Leu Thr Leu Thr His Pro His His His
7490 7495 7500

ccc caa acc cac ctc ctc acc aac ctc gcc aaa acc acc acc acc tgg 22614
Pro Gln Thr His Leu Leu Thr Asn Leu Ala Lys Thr Thr Thr Thr Trp
7505 7510 7515 7520

cac ccc cac cac tac acc cac cac cac aac caa ccc cac acc cac acc 22662
His Pro His His Tyr Thr His His His Asn Gln Pro His Thr His Thr
7525 7530 7535

cac ctc gac ctc ccc acc tac ccc ttc caa cac cac cac tac tgg ctc 22710
His Leu Asp Leu Pro Thr Tyr Pro Phe Gln His His His Tyr Trp Leu
7540 7545 7550

gaa cta ccc agc gcc caa acc agc ccc ggt caa agg cgt tct cgc cgc 22758
Glu Leu Pro Ser Ala Gln Thr Ser Pro Gly Gln Arg Arg Ser Arg Arg
7555 7560 7565

tcg gct cca gac acc gcc gag tcg gag ttc tgg gac gcg gtg aac gag 22806
Ser Ala Pro Asp Thr Ala Glu Ser Glu Phe Trp Asp Ala Val Asn Glu
7570 7575 7580

gaa gac ctc cag agc ctc gcc gaa acc ctc gac atc gac gcc tct gct 22854
Glu Asp Leu Gln Ser Leu Ala Glu Thr Leu Asp Ile Asp Ala Ser Ala
7585 7590 7595 7600

ctg gac acg gtg gtg ccc gca ctc tcc gcc tgg cac cgc cac caa cac 22902

Leu Asp Thr Val Val Pro Ala Leu Ser Ala Trp His Arg His Gln His
 7605 7610 7615

gac caa gcc cgc atc aac acc tgg acc tac cag gaa acc tgg aaa ccc 22950
 Asp Gln Ala Arg Ile Asn Thr Trp Thr Tyr Gln Glu Thr Trp Lys Pro
 7620 7625 7630

ctc acc ctc ccc acc acc cac caa ccc cac caa acc tgg ctc atc gcc 22998
 Leu Thr Leu Pro Thr Thr His Gln Pro His Gln Thr Trp Leu Ile Ala
 7635 7640 7645

atc ccc gaa acc cag acc cac cac ccc cac atc acc aac atc ctc acc 23046
 Ile Pro Glu Thr Gln Thr His His Pro His Ile Thr Asn Ile Leu Thr
 7650 7655 7660

aac ctc cac cac cac ggc atc acc ccc atc ccc ctc act gtc aac cac 23094
 Asn Leu His His His Gly Ile Thr Pro Ile Pro Leu Thr Val Asn His
 7665 7670 7675 7680

acc cac acc aac ccc caa cac ctc cac cac acc ctc cac cac acc cga 23142
 Thr His Thr Asn Pro Gln His Leu His His Thr Leu His His Thr Arg
 7685 7690 7695

caa caa gcc caa aac cac acc acc gga ccc atc acc ggc ctg ctc tcc 23190
 Gln Gln Ala Gln Asn His Thr Thr Gly Pro Ile Thr Gly Leu Leu Ser
 7700 7705 7710

ctc ctc gcc ctc gac gaa aca ccc cac ccc cac cac ccc cac aca ccc 23238
 Leu Leu Ala Leu Asp Glu Thr Pro His Pro His His Pro His Thr Pro
 7715 7720 7725

acc ggc acc ctc ctc aac ctc acc ctc ccc caa acc cac acc caa acc 23286
 Thr Gly Thr Leu Leu Asn Leu Thr Leu Pro Gln Thr His Thr Gln Thr
 7730 7735 7740

cac cca cca acc ccc ctc tgg tac gcc acc acc aac gcc acc acc acc 23334
 His Pro Pro Thr Pro Leu Trp Tyr Ala Thr Thr Asn Ala Thr Thr Thr
 7745 7750 7755 7760

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cac ccc aac gac ccc ctc aca cac ccc acc caa gcc caa acc tgg gga	23382
His Pro Asn Asp Pro Leu Thr His Pro Thr Gln Ala Gln Thr Trp Gly	
7765 7770 7775	
ctc gcc cgc acc acc ctc ctc gaa cac ccc acc cac acc gcc gga atc	23430
Leu Ala Arg Thr Thr Leu Leu Glu His Pro Thr His Thr Ala Gly Ile	
7780 7785 7790	
atc gac ctc ccc acc acc ccc acc ccc cac acc ctc cac cac ctc acc	23478
Ile Asp Leu Pro Thr Thr Pro Thr Pro His Thr Leu His His Leu Thr	
7795 7800 7805	
caa acc ctc acc caa ccc cac cac caa acc caa ctc gcc atc cgc acc	23526
Gln Thr Leu Thr Gln Pro His His Gln Thr Gln Leu Ala Ile Arg Thr	
7810 7815 7820	
acc ggc acc cac acc cgc cgc ctc acc ccc acc acc ctc acc ccc aca	23574
Thr Gly Thr His Thr Arg Arg Leu Thr Pro Thr Thr Leu Thr Pro Thr	
7825 7830 7835 7840	
cac caa cca ccc acc ccc acc ccc cac gga acc acc ctc atc acc ggc	23622
His Gln Pro Pro Thr Pro Thr Pro His Gly Thr Thr Leu Ile Thr Gly	
7845 7850 7855	
gga acc ggc gcc ctc gcc acc cac ctc acc cac cac ctc acc acc cac	23670
Gly Thr Gly Ala Leu Ala Thr His Leu Thr His His Leu Thr Thr His	
7860 7865 7870	
caa ccc acc caa cac ctc ctc ctc acc agc cga acc ggc ccc cac acc	23718
Gln Pro Thr Gln His Leu Leu Leu Thr Ser Arg Thr Gly Pro His Thr	
7875 7880 7885	
ccc cac gca caa cac ctc acc acc caa ctc caa caa aaa ggc atc cac	23766
Pro His Ala Gln His Leu Thr Thr Gln Leu Gln Gln Lys Gly Ile His	
7890 7895 7900	
ctc acc atc acc acc tgc gac acc agc aac cca gac caa ctc caa caa	23814

Leu Thr Ile Thr Thr Cys Asp Thr Ser Asn Pro Asp Gln Leu Gln Gln	
7905	7910 7915 7920
ctc ctc aac acc atc ccc cca caa cac ccc ctc acc acc gtc atc cac	23862
Leu Leu Asn Thr Ile Pro Pro Gln His Pro Leu Thr Thr Val Ile His	
7925	7930 7935
acc gca ggc gtc aat ctc ttc gcc ccc gtg tgc gaa acc gat gcc gaa	23910
Thr Ala Gly Val Asn Leu Phe Ala Pro Val Ser Glu Thr Asp Ala Glu	
7940	7945 7950
tcc ttc tct tcc gtt acg gca gcg aag gca acg ggc gcg gcg att ctg	23958
Ser Phe Ser Ser Val Thr Ala Ala Lys Ala Thr Gly Ala Ala Ile Leu	
7955	7960 7965
cat gag ttg ctg ctg gac cat gaa acg ctt gaa cac ttc att ctc ttc	24006
His Glu Leu Leu Leu Asp His Glu Thr Leu Glu His Phe Ile Leu Phe	
7970	7975 7980
tcg tcg ggc gcc ggc gct tgg ggc agc ggg aat cag tgc gca tac tcg	24054
Ser Ser Gly Ala Gly Ala Trp Gly Ser Gly Asn Gln Cys Ala Tyr Ser	
7985	7990 7995 8000
gcg gcc aac gca tac ctg gac gcg ctc gcg acg cat cgt cag aca cat	24102
Ala Ala Asn Ala Tyr Leu Asp Ala Leu Ala Thr His Arg Gln Thr His	
8005	8010 8015
gga ctt ccc ggg gca tcg atc gcc tgg ggc ccc tgg gcc gga aag ggc	24150
Gly Leu Pro Gly Ala Ser Ile Ala Trp Gly Pro Trp Ala Gly Lys Gly	
8020	8025 8030
atg tcg gcc ggt gat gcg gct cat ggt tac ctg gaa aag cgc ggc att	24198
Met Ser Ala Gly Asp Ala Ala His Gly Tyr Leu Glu Lys Arg Gly Ile	
8035	8040 8045
ctg ccg atg gag cca cgc atg gcg ctc gcg gca ttc cat cgt gcg cgg	24246
Leu Pro Met Glu Pro Arg Met Ala Leu Ala Ala Phe His Arg Ala Arg	
8050	8055 8060

gcg cag cgg ccg aat tcc aac ctg atc atc gcg gac atc gac tgg gag	24294
Ala Gln Arg Pro Asn Ser Asn Leu Ile Ile Ala Asp Ile Asp Trp Glu	
8065 8070 8075 8080	
cgc ttc gtc ccc gcc ttc acc gct cga cgc cac agc ccg ctc atc gag	24342
Arg Phe Val Pro Ala Phe Thr Ala Arg Arg His Ser Pro Leu Ile Glu	
8085 8090 8095	
gac att ccg gag gtt cgg caa gcg gct cag gag ctg gaa gca gct gcg	24390
Asp Ile Pro Glu Val Arg Gln Ala Ala Gln Glu Leu Glu Ala Ala Ala	
8100 8105 8110	
tcg acg gca aag acg acc aca gct cag ccg att gcg acg tct ctc cgt	24438
Ser Thr Ala Lys Thr Thr Thr Ala Gln Pro Ile Ala Thr Ser Leu Arg	
8115 8120 8125	
gag cga ttg gcc cga ctg acg tcc tca aag cag aac cag gtg ctg ctc	24486
Glu Arg Leu Ala Arg Leu Thr Ser Ser Lys Gln Asn Gln Val Leu Leu	
8130 8135 8140	
ggc ctg att cgg aca ggc atc tgc acc gtt ctc ggc ctt cgt aat ccg	24534
Gly Leu Ile Arg Thr Gly Ile Cys Thr Val Leu Gly Leu Arg Asn Pro	
8145 8150 8155 8160	
gaa ggc atc gag gac caa cga gcc ttc cgc gac ctc ggc ttc gac tcg	24582
Glu Gly Ile Glu Asp Gln Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser	
8165 8170 8175	
ctg acg tcg gct cag ttc agc aag gaa ctc gcc aag gaa acc gga ctg	24630
Leu Thr Ser Ala Gln Phe Ser Lys Glu Leu Ala Lys Glu Thr Gly Leu	
8180 8185 8190	
cca ctc ccc ccg tcc ctg gtc ttc gac tat ccc acc ccg cag gaa tgt	24678
Pro Leu Pro Pro Ser Leu Val Phe Asp Tyr Pro Thr Pro Gln Glu Cys	
8195 8200 8205	
gct gcc cat ctg cgc aca caa ctc gtc gac cta gac gac gaa gag gac	24726

Ala Ala His Leu Arg Thr Gln Leu Val Asp Leu Asp Asp Glu Glu Asp
 8210 8215 8220

gcg gca ctg tgc aat gct ctc ccg caa gtg gcc cat cgg cgt acc gtc 24774
 Ala Ala Leu Ser Asn Ala Leu Pro Gln Val Ala His Arg Arg Thr Val
 8225 8230 8235 8240

gag gac gaa ccg atc gcc atc atc ggt atg gca tgt cgc ttc ccc ggc 24822
 Glu Asp Glu Pro Ile Ala Ile Ile Gly Met Ala Cys Arg Phe Pro Gly
 8245 8250 8255

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 Tyr Asp Pro Glu Pro Gly Arg Ala Gly Ser Ser Tyr Thr Arg Arg Gly
 85 90 95

ggt ttc ctg gag ggt gcg gcg gag ttc gat gcg ggg ttt ttc ggg atc 336
 Gly Phe Leu Glu Gly Ala Ala Glu Phe Asp Ala Gly Phe Phe Gly Ile
 100 105 110

agt ccg cgt gag gcg ttg gcg atg gat ccg cag cag cgg ttg atg ctg 384
 Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Met Leu
 115 120 125

gag gtg tcc tgg gag gcg ttg gag cgg gcg ggc atc gac ccc gcc acg 432
 Glu Val Ser Trp Glu Ala Leu Glu Arg Ala Gly Ile Asp Pro Ala Thr
 130 135 140

ttg cgc ggc agc cgg acg ggc gtc ttc gcc ggc ctc atg tcc cag gac 480
 Leu Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Leu Met Ser Gln Asp
 145 150 155 160

tac gcg acc cgt ctg ctc tcg gtc ccc gac gac ctg gcc ggc tac ctg 528
 Tyr Ala Thr Arg Leu Leu Ser Val Pro Asp Asp Leu Ala Gly Tyr Leu
 165 170 175

ggc aac ggc aac gcg gga agc atc ctg tcc gga cgc gtc gcc tac acc 576
 Gly Asn Gly Asn Ala Gly Ser Ile Leu Ser Gly Arg Val Ala Tyr Thr
 180 185 190

ttc ggc ttc gag ggc ccc gcg gtg acg gtc gac acg gcg tgc tcg tcg 624
 Phe Gly Phe Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser
 195 200 205

tcg ctg gtg gca ctg cac ctc gcc tgc cag tca ctg cgc acc ggt gag 672
 Ser Leu Val Ala Leu His Leu Ala Cys Gln Ser Leu Arg Thr Gly Glu
 210 215 220

tcc tcc ttc gcc ctc gcc gga ggc gtg acg gtc atg tcc acc ccg ggc 720
 Ser Ser Phe Ala Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Gly
 225 230 235 240

atg ttc gtg gag ttc tcg cgg cag cgg ggt ctg tcg ccg gac ggc cgg 768
 Met Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ser Pro Asp Gly Arg
 245 250 255

tgc aag gcg tac gcg tcg gct gcc gac ggc acc ggc atg tcc gag ggc 816
 Cys Lys Ala Tyr Ala Ser Ala Ala Asp Gly Thr Gly Met Ser Glu Gly
 260 265 270

gtg ggg att ttg ctg ctg gag cgg ctg tcc gag gct gaa cgt cgt ggt 864
 Val Gly Ile Leu Leu Leu Glu Arg Leu Ser Glu Ala Glu Arg Arg Gly
 275 280 285

cat cgg gtt ttg gcg gtg gtg cgg ggg agt gcg gtg aat cag gac ggt 912
 His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly
 290 295 300

gcg tcg aat ggg ttg acg gcg ccg aat ggt ccg tcg cag cag cgg gtg 960
 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
 305 310 315 320

att cgg cag gcg ttg gcg tgt gcg ggg ttg tct gtg gcg gat gtg gat 1008
 Ile Arg Gln Ala Leu Ala Cys Ala Gly Leu Ser Val Ala Asp Val Asp
 325 330 335

gtg gtg gag ggg cac ggg acg ggc acg acg ctg ggt gat ccg atc gag 1056
 Val Val Glu Gly His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu
 340 345 350

gcg cag gcg ttg ctc gcc acg tac ggg cag cgg gcc ggt gac acg ccg 1104
 Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Arg Ala Gly Asp Thr Pro

355

360

365

gtg tgg ttg ggg tcg gtg aag tcg aac atc ggg cat gcg cag gct gct 1152
 Val Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Ala Gln Ala Ala
 370 375 380

gcg ggt gtg gcg ggt gtg atc aag atg gtg atg gcg ttg cgg gcg ggg 1200
 Ala Gly Val Ala Gly Val Ile Lys Met Val Met Ala Leu Arg Ala Gly
 385 390 395 400

gtg ttg ccg cgg acg ttg cat gtg gat gag ccg tcg tcg cag gtg gat 1248
 Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser Ser Gln Val Asp
 405 410 415

tgg tcg agt ggg tcg gtt cgt gtg ttg gcg gat gag gtg gag tgg ccg 1296
 Trp Ser Ser Gly Ser Val Arg Val Leu Ala Asp Glu Val Glu Trp Pro
 420 425 430

ggg gtg gag ggt cgg ctg cgg cgt gcg ggg gtg tct gcg ttc ggg gtg 1344
 Gly Val Glu Gly Arg Leu Arg Arg Ala Gly Val Ser Ala Phe Gly Val
 435 440 445

agt ggg acg aat gcg cat gtg att ttg gag gag gcg tcg ggg ggc gcg 1392
 Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala Ser Gly Gly Ala
 450 455 460

ggt ggg ggt gcg ggc cgg ctg cag gag ttg ggt ccg ggg gtg gtg tcg 1440
 Gly Gly Gly Ala Gly Arg Leu Gln Glu Leu Gly Pro Gly Val Val Ser
 465 470 475 480

ggt tcg ggg gtg gtg ccg tgg gtg gtg tcg gcg cgg tcg gag ttg gcg 1488
 Gly Ser Gly Val Val Pro Trp Val Val Ser Ala Arg Ser Glu Leu Ala
 485 490 495

ttg cgg ggg cag gcg cgt cgg ttg cgt ggg gtt gtg gcg gtt ggt ggg 1536
 Leu Arg Gly Gln Ala Arg Arg Leu Arg Gly Val Val Ala Val Gly Gly
 500 505 510

ggt gcg gat ggt gtg ggg gtg agt ccg gct ggg gtc ggg cgg gct ttg 1584
 Gly Ala Asp Gly Val Gly Val Ser Pro Ala Gly Val Gly Arg Ala Leu
 515 520 525

gtg tcg gag cgg tcg gtg ttc gag cat cgt gcg gtg gtc gtg gcc gag 1632
 Val Ser Glu Arg Ser Val Phe Glu His Arg Ala Val Val Val Ala Glu
 530 535 540

gac cgc gac gag ttc ctg cac gca ctc gac gca ctg gcc ggc ggc cgc 1680
 Asp Arg Asp Glu Phe Leu His Ala Leu Asp Ala Leu Ala Gly Gly Arg
 545 550 555 560

ccc gtg ccc ggc gtc gtc gag gga cga acc acc tcg ggc gaa ctc gcc 1728
 Pro Val Pro Gly Val Val Glu Gly Arg Thr Thr Ser Gly Glu Leu Ala
 565 570 575

gta ctc ttc gcc ggg cag gga acc cag cgc gca ggc atg ggc cgc gaa 1776
 Val Leu Phe Ala Gly Gln Gly Thr Gln Arg Ala Gly Met Gly Arg Glu
 580 585 590

ctg tac gag gcg tac ccc gtc ttc gcc cag gcc atc gac gag atc tgc 1824
 Leu Tyr Glu Ala Tyr Pro Val Phe Ala Gln Ala Ile Asp Glu Ile Cys
 595 600 605

gcg gag gcc gac acc gcc cgc acc gac ccc ggt gcc cct ggg ctg cgg 1872
 Ala Glu Ala Asp Thr Ala Arg Thr Asp Pro Gly Ala Pro Gly Leu Arg
 610 615 620

gac gta ctc ttc gca ccg cag gac tct ccc gaa ggc cgg ctg atc gag 1920
 Asp Val Leu Phe Ala Pro Gln Asp Ser Pro Glu Gly Arg Leu Ile Glu
 625 630 635 640

gac acg ggt ttc gcc cag ccc gcc ctg ttc gcc ttc gag gtg gcg ctg 1968
 Asp Thr Gly Phe Ala Gln Pro Ala Leu Phe Ala Phe Glu Val Ala Leu
 645 650 655

ttc cgg ctg ctg gag acc tgg ggt ctg acg ccc gac tac gtc ctc ggc 2016
 Phe Arg Leu Leu Glu Thr Trp Gly Leu Thr Pro Asp Tyr Val Leu Gly

660

665

670

cat tcc gtc ggt gaa ctg gcg gcc gcc cat gtc gcc ggg atg ctc tgc 2064
His Ser Val Gly Glu Leu Ala Ala Ala His Val Ala Gly Met Leu Cys
675 680 685

ctt gcc gac gcg gtg gca ctg gtg gtc gca cga ggc cgc ctg atg caa 2112
Leu Ala Asp Ala Val Ala Leu Val Val Ala Arg Gly Arg Leu Met Gln
690 695 700

ggg ctc ccg tcc ggc gga gcc atg gtg gcc atc gag gcg tcc gag gac 2160
Gly Leu Pro Ser Gly Gly Ala Met Val Ala Ile Glu Ala Ser Glu Asp
705 710 715 720

gag atc ctc ccg ctg ccc gac gaa tac gca tcc cgg gtc gcg cac gcc 2208
Glu Ile Leu Pro Leu Pro Asp Glu Tyr Ala Ser Arg Val Ala His Ala
725 730 735

gcg gtg aac ggg ccg cgg tcg atc gtc ctc tcc ggg gac gag gac gcg 2256
Ala Val Asn Gly Pro Arg Ser Ile Val Leu Ser Gly Asp Glu Asp Ala
740 745 750

gtc ctg gac ctc gcg cag caa tgg gcg gca cga ggc cgc cgc acc ccg 2304
Val Leu Asp Leu Ala Gln Gln Trp Ala Ala Arg Gly Arg Arg Thr Arg
755 760 765

cgg ctg cgg acc agc cac gcc ttc cac tcg ccg cac atg gac gcc atg 2352
Arg Leu Arg Thr Ser His Ala Phe His Ser Pro His Met Asp Ala Met
770 775 780

ttg ggc gac ttc cgc cgc gcg gcc gag cag gtc acc ttc agc gcc ccg 2400
Leu Gly Asp Phe Arg Arg Ala Ala Glu Gln Val Thr Phe Ser Ala Pro
785 790 795 800

cgg att ccc gtc gtc tcc aac gtc acc ggc gcg ccc ctc ccc gcc gag 2448
Arg Ile Pro Val Val Ser Asn Val Thr Gly Ala Pro Leu Pro Ala Glu
805 810 815

acc atg tgc acc ccg gac tac tgg gtc gaa cac gcc cgc agc acg gtc 2496
 Thr Met Cys Thr Pro Asp Tyr Trp Val Glu His Ala Arg Ser Thr Val
 820 825 830

cgt ttc gcg gac ggc atc tca tgg ctt cag gaa cag ggc gtc acc acc 2544
 Arg Phe Ala Asp Gly Ile Ser Trp Leu Gln Glu Gln Gly Val Thr Thr
 835 840 845

tgc ctc gaa atc ggc ccc gac ggc acg ctg tcg gcc ctc gca cag gac 2592
 Cys Leu Glu Ile Gly Pro Asp Gly Thr Leu Ser Ala Leu Ala Gln Asp
 850 855 860

tcg ctc agt gca ccg gcc cgc gcc atc ccc gcc ctg cgg ccg gac cag 2640
 Ser Leu Ser Ala Pro Ala Arg Ala Ile Pro Ala Leu Arg Pro Asp Gln
 865 870 875 880

ccg gag gca cgg tcg gtc atg acc gcc ctg gcg gag ttg ttc gtg gct 2688
 Pro Glu Ala Arg Ser Val Met Thr Ala Leu Ala Glu Leu Phe Val Ala
 885 890 895

ggg acg gcg gtt gag tgg gcc ggt gtg ttc gag ggg act gct cgc gag 2736
 Gly Thr Ala Val Glu Trp Ala Gly Val Phe Glu Gly Thr Ala Arg Glu
 900 905 910

gtc ggt gat gga tgc ggg gtg gag ctg ccg acg tat gcg ttt gag cgg 2784
 Val Gly Asp Gly Cys Gly Val Glu Leu Pro Thr Tyr Ala Phe Glu Arg
 915 920 925

gag cga ttt tgg ctg gac gtg gag gag gga tct gcg gga ggt tcc ggg 2832
 Glu Arg Phe Trp Leu Asp Val Glu Glu Gly Ser Ala Gly Gly Ser Gly
 930 935 940

gtt tcc ggg atg tgg ggt ggt ccg ttg tgg gag gcg gtc gag tgt ggt 2880
 Val Ser Gly Met Trp Gly Gly Pro Leu Trp Glu Ala Val Glu Cys Gly
 945 950 955 960

gat gcg ggg gtg gtg gca tcg ctc ctt ggg gtg gat gag ggg gcg tcg 2928
 Asp Ala Gly Val Val Ala Ser Leu Leu Gly Val Asp Glu Gly Ala Ser

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965

970

975

ctg ggt gcg gtg gtg tcg gcg ttg ggg gaa tgg ggg cgg gta cgg cac 2976
Leu Gly Ala Val Val Ser Ala Leu Gly Glu Trp Gly Arg Val Arg His
980 985 990

gag cgt gaa gtg gtg gac ggg tgg cgc tat cgg gag gtg tgg cga ccc 3024
Glu Arg Glu Val Val Asp Gly Trp Arg Tyr Arg Glu Val Trp Arg Pro
995 1000 1005

gtt tcg ggc ggt ggt gta ggg ggg ctg tcg ggc gcg tgg ctg gtg gtg 3072
Val Ser Gly Gly Gly Val Gly Gly Leu Ser Gly Ala Trp Leu Val Val
1010 1015 1020

tcc gag ggc gag gcg ggc ccg gtt gat gtg gtg gcg gag ggg ttg gag 3120
Ser Glu Gly Glu Ala Gly Pro Val Asp Val Val Ala Glu Gly Leu Glu
1025 1030 1035 1040

cgg tgt ggg gcg cga gtg gtt cgg gtg gag gtg gaa gcg ggg tgt gtg 3168
Arg Cys Gly Ala Arg Val Val Arg Val Glu Val Glu Ala Gly Cys Val
1045 1050 1055

agc agg gaa gtg ttg gcc ggc cac ctg cgt gag gcg gtc gat ggt gag 3216
Ser Arg Glu Val Leu Ala Gly His Leu Arg Glu Ala Val Asp Gly Glu
1060 1065 1070

gct gtc ggc ggt gtc gtc tcc ctt gtg ggc tgg ggg agt ggc gtc gtg 3264
Ala Val Gly Gly Val Val Ser Leu Val Gly Trp Gly Ser Gly Val Val
1075 1080 1085

cag gcg gga gtg gcg tct gtg ggg ttg gtg cag gcg ctg ggt gat gtg 3312
Gln Ala Gly Val Ala Ser Val Gly Leu Val Gln Ala Leu Gly Asp Val
1090 1095 1100

ggc gtg ggg gcg cgg ctg tgg tgt gtg acg ggc ggg gcc gtg tcg gtg 3360
Gly Val Gly Ala Arg Leu Trp Cys Val Thr Gly Gly Ala Val Ser Val
1105 1110 1115 1120

ggg ggc cgg gat gct gtg tgg ggg ccg gcc tcg ggt gtg gtg tgg ggg 3408
 Gly Gly Arg Asp Ala Val Trp Gly Pro Ala Ser Gly Val Val Trp Gly
 1125 1130 1135

ctg ggc cgt gtg gtg ggg gcg gag gca ccg gac cgc tgg ggt ggg ctg 3456
 Leu Gly Arg Val Val Gly Ala Glu Ala Pro Asp Arg Trp Gly Gly Leu
 1140 1145 1150

gtt gat gtg ccg gag ctc gtg gat gag cgg gtg gtc gat ggg ttg gta 3504
 Val Asp Val Pro Glu Leu Val Asp Glu Arg Val Val Asp Gly Leu Val
 1155 1160 1165

ggg ggc cgt gtg ggg gga ggg ggt gag agt gag ttt gcc gtg 3552
 Gly Val Leu Ala Gly Val Gly Gly Gly Gly Glu Ser Glu Phe Ala Val
 1170 1175 1180

cgg tct tcg ggg gcg ttt gtg cgg cgg ttg gtg cgg gcg ccg ttg gag 3600
 Arg Ser Ser Gly Ala Phe Val Arg Arg Leu Val Arg Ala Pro Leu Glu
 1185 1190 1195 1200

gag gcc gtc gcg gag cgg gag tgg cgg ccc cgc ggc acc gta ctc gtc 3648
 Glu Ala Val Ala Glu Arg Glu Trp Arg Pro Arg Gly Thr Val Leu Val
 1205 1210 1215

acc gga ggc acc ggc gag ttg ggt gcg cac gtc gcc cgg tgg atg gcc 3696
 Thr Gly Gly Thr Gly Glu Leu Gly Ala His Val Ala Arg Trp Met Ala
 1220 1225 1230

cgg cgt ggc gcc gaa cac ctg ctg ctg gtg agc cga cgc ggg gag agc 3744
 Arg Arg Gly Ala Glu His Leu Leu Leu Val Ser Arg Arg Gly Glu Ser
 1235 1240 1245

gcc cag gga gtc gaa gaa ctc cga gcg gac ttg atg ggc ttg ggc gcg 3792
 Ala Gln Gly Val Glu Glu Leu Arg Ala Asp Leu Met Gly Leu Gly Ala
 1250 1255 1260

cgg gtg tcg gtg gtg gcg tgt gat gcg gcg gac cgt gag gcg ttg gcg 3840
 Arg Val Ser Val Val Ala Cys Asp Ala Ala Asp Arg Glu Ala Leu Ala

1265

1270

1275

1280

gag gtg ttg cgg tcg gcc gtt ccg gcg gag tgc ccg ctg ggt gtg gtg 3888
 Glu Val Leu Arg Ser Ala Val Pro Ala Glu Cys Pro Leu Gly Val Val
 1285 1290 1295

gtg cat gcc gcg gga gtt gtg gat gac ggg gtg ttg gag ggg ttg tcg 3936
 Val His Ala Ala Gly Val Val Asp Asp Gly Val Leu Glu Gly Leu Ser
 1300 1305 1310

tcc gag cgt gtc acg ggg gtg ctg cgg gcg aag gcg ctg gcg gcc tgg 3984
 Ser Glu Arg Val Thr Gly Val Leu Arg Ala Lys Ala Leu Ala Ala Trp
 1315 1320 1325

aat ctg cat gag ttg acg cgg ggg gcg gat ctt tcg ggg ttc gtg gtg 4032
 Asn Leu His Glu Leu Thr Arg Gly Ala Asp Leu Ser Gly Phe Val Val
 1330 1335 1340

ttc tcg tcg gct gcg gcg acg ttc ggg ccg gcg gga cag ggg agt tac 4080
 Phe Ser Ser Ala Ala Ala Thr Phe Gly Pro Ala Gly Gln Gly Ser Tyr
 1345 1350 1355 1360

gcg gcg gcg aac gcg tat gtg gag gca atc gtt cgg cac cgg cgt ggt 4128
 Ala Ala Ala Asn Ala Tyr Val Glu Ala Ile Val Arg His Arg Arg Gly
 1365 1370 1375

gag ggc ctg ccg ggg ttg gcg gtg gcg tgg ggt ccg tgg gct ggt ggg 4176
 Glu Gly Leu Pro Gly Leu Ala Val Ala Trp Gly Pro Trp Ala Gly Gly
 1380 1385 1390

ggg atg gcg gag ggg gcc gtg ggg cag atg cgg cgt cgg ggt ctg gcg 4224
 Gly Met Ala Glu Gly Ala Val Gly Gln Met Arg Arg Arg Gly Leu Ala
 1395 1400 1405

gcg atg acg ccg gag acg gcg ctg gtg gca ctg ggc cag gcg ttg gac 4272
 Ala Met Thr Pro Glu Thr Ala Leu Val Ala Leu Gly Gln Ala Leu Asp
 1410 1415 1420

cat gac gag acc tgt gtg acg gtc gcc gac atc gac tgg gac cga ttc 4320
 His Asp Glu Thr Cys Val Thr Val Ala Asp Ile Asp Trp Asp Arg Phe
 1425 1430 1435 1440

acc gcc aac tcc ctc ccc ggc tcc cga ctc tcg ccc ctc atc agc gac 4368
 Thr Ala Asn Ser Leu Pro Gly Ser Arg Leu Ser Pro Leu Ile Ser Asp
 1445 1450 1455

atc ccc gaa gca cgc ctc gcc cgg gaa acc acc gga ctc gac acc gcc 4416
 Ile Pro Glu Ala Arg Leu Ala Arg Glu Thr Thr Gly Leu Asp Thr Ala
 1460 1465 1470

acc gca tcc ccc gac tcg ttc tcc gca cgg ctc aag gcc atg gac acc 4464
 Thr Ala Ser Pro Asp Ser Phe Ser Ala Arg Leu Lys Ala Met Asp Thr
 1475 1480 1485

gcc gag cag gaa cgt gcg ctt ctc gac ctg gtc cgt acg tac gcg gcg 4512
 Ala Glu Gln Glu Arg Ala Leu Leu Asp Leu Val Arg Thr Tyr Ala Ala
 1490 1495 1500

acc gtg ctc gga cac agc acc ccc acc gcc gta cgc cct gag cga gcc 4560
 Thr Val Leu Gly His Ser Thr Pro Thr Ala Val Arg Pro Glu Arg Ala
 1505 1510 1515 1520

ttc cgc gac ctg ggc ttc gtc tcc gtg agc gcc gtc gaa ctg cgc aac 4608
 Phe Arg Asp Leu Gly Phe Val Ser Val Ser Ala Val Glu Leu Arg Asn
 1525 1530 1535

cgc ctc aac gcc gtc acc ggg ctc ctc ctg ccc acc acg ctg atc ttc 4656
 Arg Leu Asn Ala Val Thr Gly Leu Leu Leu Pro Thr Thr Leu Ile Phe
 1540 1545 1550

gac tac ccc act ccc tcc gcg ctg gcc gga tac ctc aag gaa cag ctg 4704
 Asp Tyr Pro Thr Pro Ser Ala Leu Ala Gly Tyr Leu Lys Glu Gln Leu
 1555 1560 1565

gag gag ggc gcg ggc ggc cag cgt gac att gct cct ccg gtc ccg gcg 4752
 Glu Glu Gly Ala Gly Gly Gln Arg Asp Ile Ala Pro Pro Val Pro Ala

1570

1575

1580

tcg cgt gtc gac gtt gac gag ccg att gcg att gtg ggg atg gcg tgc 4800
 Ser Arg Val Asp Val Asp Glu Pro Ile Ala Ile Val Gly Met Ala Cys
 1585 1590 1595 1600

cgt ttt ccg ggg ggt gtg gag tcg gcg gag gac ttg tgg gaa ctg gtc 4848
 Arg Phe Pro Gly Gly Val Glu Ser Ala Glu Asp Leu Trp Glu Leu Val
 1605 1610 1615

gcg tcg ggt cgg gat gcg gtg gga gag ttt ccg gtc gac cgg ggt tgg 4896
 Ala Ser Gly Arg Asp Ala Val Gly Glu Phe Pro Val Asp Arg Gly Trp
 1620 1625 1630

gac gtg gag gct ttc tat gat ccg gag ccg ggg cgg gcg ggt tcg tcg 4944
 Asp Val Glu Ala Phe Tyr Asp Pro Glu Pro Gly Arg Ala Gly Ser Ser
 1635 1640 1645

tat acg cgc cgg ggc ggt ttc ctg gag ggt gcg gcg gag ttc gat gcg 4992
 Tyr Thr Arg Arg Gly Gly Phe Leu Glu Gly Ala Ala Glu Phe Asp Ala
 1650 1655 1660

ggg ttt ttc ggg atc agt ccg cgt gag gcg ttg gcg atg gat ccg cag 5040
 Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln
 1665 1670 1675 1680

cag cgg ttg atg ctg gag gtg tcc tgg gag gcg ttg gag cgg gcg ggc 5088
 Gln Arg Leu Met Leu Glu Val Ser Trp Glu Ala Leu Glu Arg Ala Gly
 1685 1690 1695

atc gac ccc gcc acg ttg cgc ggg tcc acg acc ggt gtc ttc gcc ggc 5136
 Ile Asp Pro Ala Thr Leu Arg Gly Ser Thr Thr Gly Val Phe Ala Gly
 1700 1705 1710

atg tgc agt cag gac tac gcc gac ctc gtg cgc cgg gcc acc gag gac 5184
 Met Cys Ser Gln Asp Tyr Ala Asp Leu Val Arg Arg Ala Thr Glu Asp
 1715 1720 1725

ctc gag ggc tac gcc atg acg ggc ctg tcc agc agc gtc aca tcc gga 5232
 Leu Glu Gly Tyr Ala Met Thr Gly Leu Ser Ser Ser Val Thr Ser Gly
 1730 1735 1740

cgc gtc gcc tac acc ctg ggg ctc gag ggt ccg gcg gtg acg gtg gat 5280
 Arg Val Ala Tyr Thr Leu Gly Leu Glu Gly Pro Ala Val Thr Val Asp
 1745 1750 1755 1760

acg gcg tgt tcg tcg tcg ttg gtg gcg ctg cat ctg gcg tgt cag gcg 5328
 Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Gln Ala
 1765 1770 1775

ttg agg tcg ggg gag tgt tcg ctg gcg ttg gcg ggg ggt gtg acg gtg 5376
 Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Ala Gly Gly Val Thr Val
 1780 1785 1790

atg tcg acg ccg ggt gcg ttt gtg gag ttc tcg cgg cag cgg ggt ctg 5424
 Met Ser Thr Pro Gly Ala Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
 1795 1800 1805

tcg ccg gac ggc cgg tgc aag gcg tac ggg tcg ggg gcc gat ggg gtc 5472
 Ser Pro Asp Gly Arg Cys Lys Ala Tyr Gly Ser Gly Ala Asp Gly Val
 1810 1815 1820

ggc tgg gcc gag ggt gtg ggt gtg ctg ttg gtg gag cgg ctg tcc gag 5520
 Gly Trp Ala Glu Gly Val Gly Val Leu Leu Val Glu Arg Leu Ser Glu
 1825 1830 1835 1840

gct gaa cgt cgt ggt cat cgg gtt ttg gcg gtg gtg cgg ggg agt gcg 5568
 Ala Glu Arg Arg Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala
 1845 1850 1855

gtg aat cag gac ggt gcg tcg aat ggg ttg acg gcg ccg aat ggt ccg 5616
 Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro
 1860 1865 1870

tcg cag cag cgg gtg att cgg cag gcg ttg gcg tgt gcg ggg ttg tcc 5664
 Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala Cys Ala Gly Leu Ser

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1875	1880	1885	
gtg gcg gat gtg gat gtg gtg gag ggg cac ggg acg ggt acg acg ttg			5712
Val Ala Asp Val Asp Val Val Glu Gly His Gly Thr Gly Thr Thr Leu			
1890	1895	1900	
ggt gat ccg atc gag gcg cag gcg ttg ctc gcc act tat ggg cag ggt			5760
Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gly			
1905	1910	1915	1920
cgt tcg ggg gag cgg ccg gtg tgg ttg ggg tcg gtg aag tcg aac atc			5808
Arg Ser Gly Glu Arg Pro Val Trp Leu Gly Ser Val Lys Ser Asn Ile			
1925	1930	1935	
ggg cat gcg cag gct gct gcg ggt gtg gcg ggt gtg atc aag atg gtg			5856
Gly His Ala Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val			
1940	1945	1950	
atg gcg ttg cgg gcg ggg gtg ttg ccg cgg acg ttg cat gtg gat gag			5904
Met Ala Leu Arg Ala Gly Val Leu Pro Arg Thr Leu His Val Asp Glu			
1955	1960	1965	
ccg tcg tcg cag gtg gat tgg tcg agt ggg tcg gtt cgt gtg ttg gcg			5952
Pro Ser Ser Gln Val Asp Trp Ser Ser Gly Ser Val Arg Val Leu Ala			
1970	1975	1980	
gat gag gtg gag tgg ccg ggg gtg gag ggt cgg ctg cgg cgt gcg ggg			6000
Asp Glu Val Glu Trp Pro Gly Val Glu Gly Arg Leu Arg Arg Ala Gly			
1985	1990	1995	2000
gtg tct gcg ttc ggg gtg agt ggg acg aat gcg cat gtg att ttg gag			6048
Val Ser Ala Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu			
2005	2010	2015	
gag gcg tcc ggg ggc gcg gat ggg ggt gcg ggc cgg ctg cag gag ttg			6096
Glu Ala Ser Gly Gly Ala Asp Gly Gly Ala Gly Arg Leu Gln Glu Leu			
2020	2025	2030	

ggt ccg ggg gtg gtg tcg ggt tcg ggg gtg gtg ccg tgg gtg gtg tcg 6144
 Gly Pro Gly Val Val Ser Gly Ser Gly Val Val Pro Trp Val Val Ser
 2035 2040 2045

gcg cgg tcg gag ttg gcg ttg cgg ggg cag gcg cgt cgg ttg cgt ggg 6192
 Ala Arg Ser Glu Leu Ala Leu Arg Gly Gln Ala Arg Arg Leu Arg Gly
 2050 2055 2060

gtt gtg gcg gtt ggt ggg ggt gcg gat ggt gtg ggg gtg agt ccg gct 6240
 Val Val Ala Val Gly Gly Gly Ala Asp Gly Val Gly Val Ser Pro Ala
 2065 2070 2075 2080

ggg gtc ggg cgg gct ttg gtg tcg gag cgg tcg gtg ttc gag cat cgt 6288
 Gly Val Gly Arg Ala Leu Val Ser Glu Arg Ser Val Phe Glu His Arg
 2085 2090 2095

gcg gtg gtc gtg gcc gag gac cgc gac gag ttc ctg cac gca ctc gac 6336
 Ala Val Val Val Ala Glu Asp Arg Asp Glu Phe Leu His Ala Leu Asp
 2100 2105 2110

gca ctg gcc gag ggg gca ccc acc gcg ggg gtg gta cag ggt gtg gcc 6384
 Ala Leu Ala Glu Gly Ala Pro Thr Ala Gly Val Val Gln Gly Val Ala
 2115 2120 2125

gga ccg gcg gcc gac gga aag atc gcc atg ctg ttc gga gga cag ggc 6432
 Gly Pro Ala Ala Asp Gly Lys Ile Ala Met Leu Phe Gly Gly Gln Gly
 2130 2135 2140

acc cac tgg gaa ggc atg gcg cag gaa ctc ctc ggc tcc tca ccg gtc 6480
 Thr His Trp Glu Gly Met Ala Gln Glu Leu Leu Gly Ser Ser Pro Val
 2145 2150 2155 2160

ttc gcc cag cag atg tcc gac tgc gcc caa gcc ctc gaa ccg tac ctg 6528
 Phe Ala Gln Gln Met Ser Asp Cys Ala Gln Ala Leu Glu Pro Tyr Leu
 2165 2170 2175

gac tgg tct ctc ctc gac gtc ctg cgc ggc gca ccg gac gca ccc cct 6576
 Asp Trp Ser Leu Leu Asp Val Leu Arg Gly Ala Pro Asp Ala Pro Pro

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2180

2185

2190

ctg caa cgc gtc gat gtc gtc cag ccc gtc ctc ttc gcg gtg atg gtc 6624
Leu Gln Arg Val Asp Val Val Gln Pro Val Leu Phe Ala Val Met Val

2195

2200

2205

tcg ctg gcg gcg ctc tgg cgc tcg tac ggt gta cac ccg gac gcg gtg 6672
Ser Leu Ala Ala Leu Trp Arg Ser Tyr Gly Val His Pro Asp Ala Val

2210

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2220

gcc ggg cac tcg cag ggc gag atc gca gcg gcc tac gtc gcc ggt gca 6720
Ala Gly His Ser Gln Gly Glu Ile Ala Ala Ala Tyr Val Ala Gly Ala

2225

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2240

ctc tcc ctc gac gac gcc gcc cgg gtc acc gcc ctg cgc agc cag gcg 6768
Leu Ser Leu Asp Asp Ala Ala Arg Val Thr Ala Leu Arg Ser Gln Ala

2245

2250

2255

ctg gcc gca ctg gcc ggg cag ggg gcg atg gca tcg gtc ggt ctg ccg 6816
Leu Ala Ala Leu Ala Gly Gln Gly Ala Met Ala Ser Val Gly Leu Pro

2260

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2270

gtc gag aag ctg gag ccg cgt ctt gcg aca tgg ggc gac cgt ctg gtc 6864
Val Glu Lys Leu Glu Pro Arg Leu Ala Thr Trp Gly Asp Arg Leu Val

2275

2280

2285

atc gcc gcc gtg aac ggg gcg cgt tcg gcc gtg gtc tcc ggg gag ccg 6912
Ile Ala Ala Val Asn Gly Ala Arg Ser Ala Val Val Ser Gly Glu Pro

2290

2295

2300

gaa gcg gtc gac gcc ctg gtg gag gag ctg tca cac gaa gac gta ccg 6960
Glu Ala Val Asp Ala Leu Val Glu Glu Leu Ser His Glu Asp Val Pro

2305

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gcc cgc agg ctc atg gtc gac tgg gcg tcg cac tcc ccg cag gtc gag 7008
Ala Arg Arg Leu Met Val Asp Trp Ala Ser His Ser Pro Gln Val Glu

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gcg atc cag ggg cgg ctg ctc gaa ctc ctc gcc ccc atc cgc gcg agg 7056
 Ala Ile Gln Gly Arg Leu Leu Glu Leu Leu Ala Pro Ile Arg Ala Arg
 2340 2345 2350

acc ggc gac gtg ccc ttc tac tcc acc gtc acc ggc gaa cgc atc gac 7104
 Thr Gly Asp Val Pro Phe Tyr Ser Thr Val Thr Gly Glu Arg Ile Asp
 2355 2360 2365

ggc acc gaa ctc gac gcc gac tac tgg tac cgc aac ctg cgc cag gtc 7152
 Gly Thr Glu Leu Asp Ala Asp Tyr Trp Tyr Arg Asn Leu Arg Gln Val
 2370 2375 2380

gtc cgc ttc cgg gac gcg aca cag gcg ctg gtc cgc gcc ggc cac acc 7200
 Val Arg Phe Arg Asp Ala Thr Gln Ala Leu Val Arg Ala Gly His Thr
 2385 2390 2395 2400

gtc ttc atc gag gcg tgc ccg cat ccg gcc gtc gcg gtc ggt gtg cag 7248
 Val Phe Ile Glu Ala Cys Pro His Pro Ala Val Ala Val Gly Val Gln
 2405 2410 2415

gaa acc ctg gac gag atg ggt gac ttg gac agc ctg gtc gtc gga tct 7296
 Glu Thr Leu Asp Glu Met Gly Asp Leu Asp Ser Leu Val Val Gly Ser
 2420 2425 2430

ctg cgc cgg ggc gaa ggc ggc ttg cga cgc ttc ctg atg tcc gtg gcc 7344
 Leu Arg Arg Gly Glu Gly Gly Leu Arg Arg Phe Leu Met Ser Val Ala
 2435 2440 2445

gag ttg ttc gtg ggt ggg gtg gcg gtt gag tgg tcc ggt gtg ttc ggg 7392
 Glu Leu Phe Val Gly Gly Val Ala Val Glu Trp Ser Gly Val Phe Gly
 2450 2455 2460

agt gtt ggt cgc ggg gtc gct ggt ggt tgc ggg gtg gag ctg ccg acg 7440
 Ser Val Gly Arg Gly Val Ala Gly Gly Cys Gly Val Glu Leu Pro Thr
 2465 2470 2475 2480

tat gcg ttc gag cga gag cgc ttt tgg ctg gat gtg gag ggg gcg ccg 7488
 Tyr Ala Phe Glu Arg Glu Arg Phe Trp Leu Asp Val Glu Gly Ala Pro

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2485

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2495

cggt ggt tcc ggg gtc tct ggg cag tgg ggt ggt cag ttg tgc gag gcg 7536
Arg Gly Ser Gly Val Ser Gly Gln Trp Gly Gly Gln Leu Ser Glu Ala
2500 2505 2510

gtg gac acc gtg cgc ggc ggc atg ctg cgc gac tgc ctc gcc gga ctc 7584
Val Asp Thr Val Arg Gly Gly Met Leu Arg Asp Cys Leu Ala Gly Leu
2515 2520 2525

gac ccc gcc gca cag gcc gag acc gtg ctg gac ctg gtc ctt acc cat 7632
Asp Pro Ala Ala Gln Ala Glu Thr Val Leu Asp Leu Val Leu Thr His
2530 2535 2540

gcc gcg gcc gtc ctt gga cac ggc acc gcc gat gcg gtg gtg ccc gag 7680
Ala Ala Ala Val Leu Gly His Gly Thr Ala Asp Ala Val Val Pro Glu
2545 2550 2555 2560

cgc gcc ttc cgc gac ctc ggt ttc gac tcc ctc acc gcc gtc gaa cta 7728
Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu
2565 2570 2575

cgc aac cgc ctc aac acc gcc acg ggc ctg cgc ttc ccg agg acc ctg 7776
Arg Asn Arg Leu Asn Thr Ala Thr Gly Leu Arg Phe Pro Arg Thr Leu
2580 2585 2590

gtg ttc gac cat ccc cgc ccg gtg gca ctc gcg gca cac atc cac gag 7824
Val Phe Asp His Pro Arg Pro Val Ala Leu Ala Ala His Ile His Glu
2595 2600 2605

cag ctg agc ggc gga agc ccg acc acc ggc act gcc ctt gcc ctt gcc 7872
Gln Leu Ser Gly Gly Ser Pro Thr Thr Gly Thr Ala Leu Ala Leu Ala
2610 2615 2620

ctt cgg gcc ccg gca ccg cgt gtg gat gtc gac gag ccg att gcc att 7920
Leu Arg Ala Pro Ala Pro Arg Val Asp Val Asp Glu Pro Ile Ala Ile
2625 2630 2635 2640

gtg ggg atg gcg tgc cgt ttt ccg ggg ggt gtg gag tcg gcg gag gat 7968
Val Gly Met Ala Cys Arg Phe Pro Gly Gly Val Glu Ser Ala Glu Asp
2645 2650 2655

ttc tgg gag ttg atc gcg tcg ggt cgg gat gcg gtg ggg gag ttt ccg 8016
Phe Trp Glu Leu Ile Ala Ser Gly Arg Asp Ala Val Gly Glu Phe Pro
2660 2665 2670

gtc gac cgg ggt tgg gac gtg gag gct ttc tat gat ccg gag ccg ggg 8064
Val Asp Arg Gly Trp Asp Val Glu Ala Phe Tyr Asp Pro Glu Pro Gly
2675 2680 2685

cgg gcg ggt acg tcc tac acg cgg tgt ggt ggg ttt ttg cag ggt gcg 8112
Arg Ala Gly Thr Ser Tyr Thr Arg Cys Gly Gly Phe Leu Gln Gly Ala
2690 2695 2700

gcg gag ttc gat gcg ggg ttt ttc ggg atc agt ccg cgt gag gcg ttg 8160
Ala Glu Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
2705 2710 2715 2720

gcg atg gat ccg cag cag cgg ttg atg ctg gag gtg tcc tgg gag gcg 8208
Ala Met Asp Pro Gln Gln Arg Leu Met Leu Glu Val Ser Trp Glu Ala
2725 2730 2735

ttg gag cgg gcg ggc atc gac ccc gcc acg ctg cac ggg tcc acg acc 8256
Leu Glu Arg Ala Gly Ile Asp Pro Ala Thr Leu His Gly Ser Thr Thr
2740 2745 2750

ggt gtc ttc gcc ggc gtc tcg cag cag gac tac gcc gag ctc ctg cgc 8304
Gly Val Phe Ala Gly Val Ser Gln Gln Asp Tyr Ala Glu Leu Leu Arg
2755 2760 2765

cgc ggc acc cag gac cac gag ggg tac gcg ctc acc ggc gtc tcc aac 8352
Arg Gly Thr Gln Asp His Glu Gly Tyr Ala Leu Thr Gly Val Ser Asn
2770 2775 2780

agc gtc gtc tcc ggg cgg ctt tcc tac acc ttc ggc ttc gag ggt ccg 8400
Ser Val Val Ser Gly Arg Leu Ser Tyr Thr Phe Gly Phe Glu Gly Pro

2785

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2800

gcg gtg acg gtg gat acg gcg tgt tgc tgc tgc ttg gtg gcg ctg cat 8448
 Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His

2805

2810

2815

ctg gcg tgt cag gcg ttg agg tgc ggg gag tgt tgc ctg gcg ttg gcg 8496
 Leu Ala Cys Gln Ala Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Ala

2820

2825

2830

ggg ggt gtg acg gtg atg tgc acg ccg ggt gcg ttt gtg gag ttc tgc 8544
 Gly Gly Val Thr Val Met Ser Thr Pro Gly Ala Phe Val Glu Phe Ser

2835

2840

2845

cgg cag cgg ggt ctg tgc ccg gac ggc cgg tgc aag gcg tac ggg tgc 8592
 Arg Gln Arg Gly Leu Ser Pro Asp Gly Arg Cys Lys Ala Tyr Gly Ser

2850

2855

2860

ggg gcc gat ggg gtc ggc tgg gcc gag ggt gtg ggt gtg ctg ttg gtg 8640
 Gly Ala Asp Gly Val Gly Trp Ala Glu Gly Val Gly Val Leu Leu Val

2865

2870

2875

2880

gag cgg ctg tcc gag gct gaa cgt cgt ggt cat cgg gtt ttg gcg gtg 8688
 Glu Arg Leu Ser Glu Ala Glu Arg Arg Gly His Arg Val Leu Ala Val

2885

2890

2895

gtg cgg ggg agt gcg gtg aat cag gac ggt gcg tgc aat ggg ttg acg 8736
 Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr

2900

2905

2910

gcg ccg aat ggt ccg tgc cag cag cgg gtg att cgg cag gcg ttg gcg 8784
 Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala

2915

2920

2925

tgt gcg ggg ttg tcc gtg gcg gat gtg gat gtg gtg gag ggg cac ggg 8832
 Cys Ala Gly Leu Ser Val Ala Asp Val Asp Val Val Glu Gly His Gly

2930

2935

2940

acg ggt acg acg ttg ggt gat ccg atc gag gcg cag gcg ttg ctc gcc 8880
 Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala
 2945 2950 2955 2960

acg tac ggg cag ggt cgt tcg ggg gag cgg ccg gtg tgg ttg ggg tcg 8928
 Thr Tyr Gly Gln Gly Arg Ser Gly Glu Arg Pro Val Trp Leu Gly Ser
 2965 2970 2975

gtg aag tcg aac atc ggg cat gcg cag gct gcc gcg ggt gtg gcc ggt 8976
 Val Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ala Gly Val Ala Gly
 2980 2985 2990

gtg atc aag atg gtc atg gcc ctg aac cac gaa ctg ttg ccg acc agc 9024
 Val Ile Lys Met Val Met Ala Leu Asn His Glu Leu Leu Pro Thr Ser
 2995 3000 3005

ctg cac atc gac gaa ccc tcc ccc cac atc gac tgg tcg agc ggc ggc 9072
 Leu His Ile Asp Glu Pro Ser Pro His Ile Asp Trp Ser Ser Gly Gly
 3010 3015 3020

gtc cgg ctt ctc acc gag ccc gta ccg tgg cag cag aac ggc cgg ccc 9120
 Val Arg Leu Leu Thr Glu Pro Val Pro Trp Gln Gln Asn Gly Arg Pro
 3025 3030 3035 3040

agg cgc gcg ggc gtc tcc gcg ttc gga gtc agc ggg acc aac gcc cac 9168
 Arg Arg Ala Gly Val Ser Ala Phe Gly Val Ser Gly Thr Asn Ala His
 3045 3050 3055

gtc atc atc gag cag gcg ccg gtc gag gcg cac gtc atc agt gag ccg 9216
 Val Ile Ile Glu Gln Ala Pro Val Glu Ala His Val Ile Ser Glu Pro
 3060 3065 3070

gta ccg gct gag gcg cac gtc atc gtc gag cag gcg ccg gtc gag gcg 9264
 Val Pro Ala Glu Ala His Val Ile Val Glu Gln Ala Pro Val Glu Ala
 3075 3080 3085

ccc cac gtg gtc gac gcc acc gga ccg gcg gac ctc acc gag ccg caa 9312
 Pro His Val Val Asp Ala Thr Gly Pro Ala Asp Leu Thr Glu Pro Gln

3090

3095

3100

gag gag gcg gct gaa ccg gag tgc gtc gct gac gcc gtg acc gag atg 9360
 Glu Glu Ala Ala Glu Pro Glu Cys Val Ala Asp Ala Val Thr Glu Met
 3105 3110 3115 3120

tcg gct gaa ccg gag tgc gtc gcc gac gcc atg tcc gag atg tcg gct 9408
 Ser Ala Glu Pro Glu Cys Val Ala Asp Ala Met Ser Glu Met Ser Ala
 3125 3130 3135

gag tgc gtc gcc gag gcc gtg tcc gac aag tcg gct gaa ccg gag tgc 9456
 Glu Cys Val Ala Glu Ala Val Ser Asp Lys Ser Ala Glu Pro Glu Cys
 3140 3145 3150

gtc gcc gac gcc atg tcc gac aag ccg gcc ctc ctg ccc atc ccg tgg 9504
 Val Ala Asp Ala Met Ser Asp Lys Pro Ala Leu Leu Pro Ile Pro Trp
 3155 3160 3165

ctg ctc tcc gcc aag tcc gag cga gcg ctg cgg ggc cag gcg cga cgg 9552
 Leu Leu Ser Ala Lys Ser Glu Arg Ala Leu Arg Gly Gln Ala Arg Arg
 3170 3175 3180

tig cgg cag ttc gct gcc agg gca tcc gat gcc cgg ccg gcc gac gtg 9600
 Leu Arg Gln Phe Ala Ala Arg Ala Ser Asp Ala Arg Pro Ala Asp Val
 3185 3190 3195 3200

gcg cac gcc ctg gcg gca cag cgg tcc gtg ttc gat cac cgg gcc gtc 9648
 Ala His Ala Leu Ala Ala Gln Arg Ser Val Phe Asp His Arg Ala Val
 3205 3210 3215

gtc gtg gcc gag gac cgc gac ggc ttc ctt cag gcc ctc gac gcg ctg 9696
 Val Val Ala Glu Asp Arg Asp Gly Phe Leu Gln Ala Leu Asp Ala Leu
 3220 3225 3230

gcc gag ggc cgg tcg gcg gac ggc ctg atc gaa ggg tcg gtc ggc ccg 9744
 Ala Glu Gly Arg Ser Ala Asp Gly Leu Ile Glu Gly Ser Val Gly Pro
 3235 3240 3245

cgt ggc ggc cac tca ggc cgc cgg cgc gga aag acc gcc atg ctg ttc 9792
 Arg Gly Gly His Ser Gly Arg Arg Arg Gly Lys Thr Ala Met Leu Phe
 3250 3255 3260

gcc gga cag ggc acg caa cgc gtg gga atg ggc cgt cag ctg tat gcg 9840
 Ala Gly Gln Gly Thr Gln Arg Val Gly Met Gly Arg Gln Leu Tyr Ala
 3265 3270 3275 3280

gct cac ccg gcc tac gcg gac gcg ctg gac cag gta ctg gcg gaa ctg 9888
 Ala His Pro Ala Tyr Ala Asp Ala Leu Asp Gln Val Leu Ala Glu Leu
 3285 3290 3295

gac ggt cac ctg gac cag ccc ctg cgc ccg ctg atc cac gcc agt gcg 9936
 Asp Gly His Leu Asp Gln Pro Leu Arg Pro Leu Ile His Ala Ser Ala
 3300 3305 3310

gat ctt gcg gat gtc gcg gat gcc gcg gat gtt ctg gac cgt acg cgg 9984
 Asp Leu Ala Asp Val Ala Asp Ala Ala Asp Val Leu Asp Arg Thr Arg
 3315 3320 3325

tac gcc cag ccg gcg ctg ttc gcc gtc cag gtc gcg ctc ttc cgg cac 10032
 Tyr Ala Gln Pro Ala Leu Phe Ala Val Gln Val Ala Leu Phe Arg His
 3330 3335 3340

ctg gaa cgt ctc ggc gtg cgc gcg gac ttc gtg gcc ggg cac tcg atc 10080
 Leu Glu Arg Leu Gly Val Arg Ala Asp Phe Val Ala Gly His Ser Ile
 3345 3350 3355 3360

ggc gag ctc gcg gcc gcc cac gtc gcc ggg gtg ctt ccc ctg gca gca 10128
 Gly Glu Leu Ala Ala Ala His Val Ala Gly Val Leu Pro Leu Ala Ala
 3365 3370 3375

gcc tgc cgc ctg gtg gcg gcc cgc ggg cgc ctg atg gag cag ctc gca 10176
 Ala Cys Arg Leu Val Ala Ala Arg Gly Arg Leu Met Glu Gln Leu Ala
 3380 3385 3390

cca ggc ggc gcc atg gtc gcc gta cgg gcg agc gaa gcc gag gcg cga 10224
 Pro Gly Gly Ala Met Val Ala Val Arg Ala Ser Glu Ala Glu Ala Arg

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3395	3400	3405	
cag gcg ctc gac ggc cgg gaa gcc cgg gtg tgc gtc ggc gcc gtg aac			10272
Gln Ala Leu Asp Gly Arg Glu Ala Arg Val Ser Val Ala Ala Val Asn			
3410	3415	3420	
gga ccc gcc tgc gtg gtg ttc tcc ggc gcc gag gac gag gtg ggg aac			10320
Gly Pro Ala Ser Val Val Phe Ser Gly Ala Glu Asp Glu Val Gly Asn			
3425	3430	3435	3440
atg gcg gac tgg ttc gcc gag cgc ggg cgg aga gtc aag cgc ctg cga			10368
Met Ala Asp Trp Phe Ala Glu Arg Gly Arg Arg Val Lys Arg Leu Arg			
3445	3450	3455	
acc ggg cat gcc ttc cac tca ccg ctg atg gac ccg atg ctg gag gag			10416
Thr Gly His Ala Phe His Ser Pro Leu Met Asp Pro Met Leu Glu Glu			
3460	3465	3470	
ttc cag cag gtc gcg gcc tgc ctg acc tac agc gaa cca gcc att ccc			10464
Phe Gln Gln Val Ala Ala Ser Leu Thr Tyr Ser Glu Pro Ala Ile Pro			
3475	3480	3485	
atg gtg tgc acg ctc acc ggc gac atc gtg gcg gcg gga gaa ctg agc			10512
Met Val Ser Thr Leu Thr Gly Asp Ile Val Ala Ala Gly Glu Leu Ser			
3490	3495	3500	
gac ccc gag tac tgg gtc cgg cag gta cgg cgg acc gtg cgc ttc ggc			10560
Asp Pro Glu Tyr Trp Val Arg Gln Val Arg Arg Thr Val Arg Phe Gly			
3505	3510	3515	3520
gac gcg atc agc cgc ctg cac acc gac gga gtc cgc acc ttc atg gaa			10608
Asp Ala Ile Ser Arg Leu His Thr Asp Gly Val Arg Thr Phe Met Glu			
3525	3530	3535	
ctg ggc cca gac ggg acc ctg tgc gca ctg gcc gag gaa tgc cta gag			10656
Leu Gly Pro Asp Gly Thr Leu Ser Ala Leu Ala Glu Glu Cys Leu Glu			
3540	3545	3550	

gcc acc gcc gac agc cac ccc gcc gac gac gac acc ggc acc ccg caa 10704
 Ala Thr Ala Asp Ser His Pro Ala Asp Asp Asp Thr Gly Thr Pro Gln
 3555 3560 3565

gag aac ctg ctc atc ccg ctc cta cgg ccg gac agc ccg gaa ccc ggc 10752
 Glu Asn Leu Leu Ile Pro Leu Leu Arg Pro Asp Ser Pro Glu Pro Gly
 3570 3575 3580

acc ctg ctc acc ggc ttg gcc cgg ctg cat acg cac gga gcg gcg gcg 10800
 Thr Leu Leu Thr Gly Leu Ala Arg Leu His Thr His Gly Ala Ala Ala
 3585 3590 3595 3600

gtc aac tgg ccc gcc gcc ctg ccc gaa cgc gat cga gcc cgc cac ctc 10848
 Val Asn Trp Pro Ala Ala Leu Pro Glu Arg Asp Arg Ala Arg His Leu
 3605 3610 3615

gac ctg ccg acc tac gcc ttc gat cac cac cgc tac tgg gtc gac acc 10896
 Asp Leu Pro Thr Tyr Ala Phe Asp His His Arg Tyr Trp Val Asp Thr
 3620 3625 3630

tcg gcc ggc cac ccg ggg gac ctg tcg gca gcg ggg ctc ggc acc gcc 10944
 Ser Ala Gly His Pro Gly Asp Leu Ser Ala Ala Gly Leu Gly Thr Ala
 3635 3640 3645

ggg cat ccc ctg ctc ggt tcc gcg gtg gca ctg gcc gag tcg cag gaa 10992
 Gly His Pro Leu Leu Gly Ser Ala Val Ala Leu Ala Glu Ser Gln Glu
 3650 3655 3660

ctc ctc ttc acc ggc cgt ctc tcc ctg cgc aca cac ccg tgg ctg gcc 11040
 Leu Leu Phe Thr Gly Arg Leu Ser Leu Arg Thr His Pro Trp Leu Ala
 3665 3670 3675 3680

gac cac gcc atc ttc ggt acc gtc ctg ctg ccc ggc acg gcc atc ctg 11088
 Asp His Ala Ile Phe Gly Thr Val Leu Leu Pro Gly Thr Ala Ile Leu
 3685 3690 3695

gaa ctg gcc gtg cgc gca ggc gac gag gtc gac tgc ggc acc gtc gag 11136
 Glu Leu Ala Val Arg Ala Gly Asp Glu Val Asp Cys Gly Thr Val Glu

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3700

3705

3710

gaa ctc acc ctg cgg aca ccg ctc gtc ctt ccc gaa cag ggc tgc gtg 11184
Glu Leu Thr Leu Arg Thr Pro Leu Val Leu Pro Glu Gln Gly Ser Val

3715

3720

3725

atc ctg caa ctc tcc gtc ggg gca ccc cag ggc ccc cag acg ccc gag 11232
Ile Leu Gln Leu Ser Val Gly Ala Pro Gln Gly Pro Gln Thr Pro Glu

3730

3735

3740

gag ccc gaa cgg cgc acc ttc gcc ctg tac gcc cgc gaa gac gac gga 11280
Glu Pro Glu Arg Arg Thr Phe Ala Leu Tyr Ala Arg Glu Asp Asp Gly

3745

3750

3755

3760

ctg tgc tcc tgc tcc gcg gcg gcg acc ggc acc gag tgg acc tgc cac 11328
Leu Ser Ser Ser Ser Ala Ala Ala Thr Gly Thr Glu Trp Thr Cys His

3765

3770

3775

gcc acc ggc gtc ctg acc ggc acc gcc cgg ccc gcg gag gag cac aca 11376
Ala Thr Gly Val Leu Thr Gly Thr Ala Arg Pro Ala Glu Glu His Thr

3780

3785

3790

cag gaa ccg tgg ccg ccc gcc gac gca gca ccg gtg gac ctg gac ggc 11424
Gln Glu Pro Trp Pro Pro Ala Asp Ala Ala Pro Val Asp Leu Asp Gly

3795

3800

3805

tgg tac gag cag ctg gcc ggc gcc ggc ctg gga tac ggg ccg gtg ttc 11472
Trp Tyr Glu Gln Leu Ala Gly Ala Gly Leu Gly Tyr Gly Pro Val Phe

3810

3815

3820

cag ggg ctg cgc gag gtc tgg ccg cgc ggg gac gag gtg ttc gcc gtc 11520
Gln Gly Leu Arg Glu Val Trp Arg Arg Gly Asp Glu Val Phe Ala Val

3825

3830

3835

3840

gtc acc ctg ccc gag agc acg gag gga cag gcg gcc gac gcc gcc cgg 11568
Val Thr Leu Pro Glu Ser Thr Glu Gly Gln Ala Ala Asp Ala Ala Arg

3845

3850

3855

tac gcc ctg cac ccg gcc ctg ctg gac gcg gca ctg cac ccg gtc gtt 11616
Tyr Ala Leu His Pro Ala Leu Leu Asp Ala Ala Leu His Pro Val Val
3860 3865 3870

ctg cgc cac gag ggc gat gcc gcc gcc gac gga cac ggc tgg ctg ccg 11664
Leu Arg His Glu Gly Asp Ala Ala Ala Asp Gly His Gly Trp Leu Pro
3875 3880 3885

ttc tcc tgg acc ggc gtc acg gtc gcc gcc tcc ggc gcc tcc acc ctg 11712
Phe Ser Trp Thr Gly Val Thr Val Ala Ala Ser Gly Ala Ser Thr Leu
3890 3895 3900

cac gtc cgt ctc acc gtc cgc acg gac gag gac gcg gtc gga ctg ctg 11760
His Val Arg Leu Thr Val Arg Thr Asp Glu Asp Ala Val Gly Leu Leu
3905 3910 3915 3920

gcc acc gac gca tcg gga cgc atc gtc atc tcc gcg ggg tcc ctc gcc 11808
Ala Thr Asp Ala Ser Gly Arg Ile Val Ile Ser Ala Gly Ser Leu Ala
3925 3930 3935

ttc cgg ccc gtc tcc gcc gag cag ctc cag gcc gcg cgc acc ggc tac 11856
Phe Arg Pro Val Ser Ala Glu Gln Leu Gln Ala Ala Arg Thr Gly Tyr
3940 3945 3950

cac gac cac ctc ttc cgc atc gaa tgg cgg ccg ctg cac ctc ccc acc 11904
His Asp His Leu Phe Arg Ile Glu Trp Arg Pro Leu His Leu Pro Thr
3955 3960 3965

aca ccg gca cgg aca gcc gac tgg gcc cta atc ggc ccc ggt gcc cgg 11952
Thr Pro Ala Arg Thr Ala Asp Trp Ala Leu Ile Gly Pro Gly Ala Arg
3970 3975 3980

cgg acg gcc gcc gtc ctg gag cgc aac ggc gcc tcc tgg cag gcc tac 12000
Arg Thr Ala Ala Val Leu Glu Arg Asn Gly Ala Ser Trp Gln Ala Tyr
3985 3990 3995 4000

ccg gac ccg gcg gct ctc gca gaa gcc ctg gcg gcc ggc gcc ccg gca 12048
Pro Asp Pro Ala Ala Leu Ala Glu Ala Leu Ala Ala Gly Ala Pro Ala

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4005

4010

4015

ccg ggc atg gtc gtc atc tgc tgc gag ccg gac ggc gca tcc gcc ccc 12096
Pro Gly Met Val Val Ile Ser Cys Glu Pro Asp Gly Ala Ser Ala Pro

4020

4025

4030

acc gat tcc gcc ctc acc gat tcc gcc ctc acc gat tcc gcc ccg gcc 12144
Thr Asp Ser Ala Leu Thr Asp Ser Ala Leu Thr Asp Ser Ala Pro Ala

4035

4040

4045

ggc tgc gcc ccg gcc gac tcc acc gcc ctc gcc gac gcc acc ccg caa 12192
Gly Ser Ala Pro Ala Asp Ser Thr Ala Leu Ala Asp Ala Thr Arg Gln

4050

4055

4060

gcc acc acc cgc gtc ctc gcc ctg ctc cag gaa tgg gtc gcc gac gaa 12240
Ala Thr Thr Arg Val Leu Ala Leu Leu Gln Glu Trp Val Ala Asp Glu

4065

4070

4075

4080

ccg ctc gcg gcc tgc cgc ctg gcc ctc ctc acg cac ggc tgc gtc acc 12288
Arg Leu Ala Ala Cys Arg Leu Ala Leu Thr His Gly Ser Val Thr

4085

4090

4095

gcg acc ccc gac gag ccc gtg tcc gac ctc gca cac gcc gcc gtc tgg 12336
Ala Thr Pro Asp Glu Pro Val Ser Asp Leu Ala His Ala Ala Val Trp

4100

4105

4110

gga ctg gtc cgc tcc gtg cag acc gag aac ccc gac ccg ttc ctg ctg 12384
Gly Leu Val Arg Ser Val Gln Thr Glu Asn Pro Asp Arg Phe Leu Leu

4115

4120

4125

gcc gac acc gac gac acc gac gcc tcc cgc aac gcc ctt ccc ctg ctg 12432
Ala Asp Thr Asp Asp Thr Asp Ala Ser Arg Asn Ala Leu Pro Leu Leu

4130

4135

4140

gcc ggg gaa ccg cag atc gcc ctg cga aat ggt gcc gtc cgc atc ccg 12480
Ala Gly Glu Pro Gln Ile Ala Leu Arg Asn Gly Ala Val Arg Ile Pro

4145

4150

4155

4160

cgg atg aca cga gtg ccc gtc cgg cag cca cag ccg agc acc acc gac 12528
 Arg Met Thr Arg Val Pro Val Arg Gln Pro Gln Pro Ser Thr Thr Asp
 4165 4170 4175

gcc gac tgg gac ccg gag gcc acg gtc ctc atc acg ggc ggt acc ggc 12576
 Ala Asp Trp Asp Pro Glu Ala Thr Val Leu Ile Thr Gly Gly Thr Gly
 4180 4185 4190

gtc ctc ggc cgg ctc gtc gcc cgt cat ctc gcc acg gcc cac ggg gta 12624
 Val Leu Gly Arg Leu Val Ala Arg His Leu Ala Thr Ala His Gly Val
 4195 4200 4205

cgg cac ctg ctg ctg gcc acc cgc cgc ggc acg gcc gcg gac ggc gcc 12672
 Arg His Leu Leu Leu Ala Thr Arg Arg Gly Thr Ala Ala Asp Gly Ala
 4210 4215 4220

gcc gac ctg gtc gcc gaa ctc gcc ggc ctc ggc gcc gag gcc acg gtc 12720
 Ala Asp Leu Val Ala Glu Leu Ala Gly Leu Gly Ala Glu Ala Thr Val
 4225 4230 4235 4240

gcg gcc tgc gac atc ggg gac cgg gcg gcc gtc gcc gcg ctc ctc gac 12768
 Ala Ala Cys Asp Ile Gly Asp Arg Ala Ala Val Ala Ala Leu Leu Asp
 4245 4250 4255

caa gtg ccc gcg cag cac ccc ctg aaa gcc gtg atc cac acg gcc ggt 12816
 Gln Val Pro Ala Gln His Pro Leu Lys Ala Val Ile His Thr Ala Gly
 4260 4265 4270

gtg gtc gac gac ggc atc ctc acc tcg ctc act ccg gag cgc atg gag 12864
 Val Val Asp Asp Gly Ile Leu Thr Ser Leu Thr Pro Glu Arg Met Glu
 4275 4280 4285

gcc gtc ctg cac gcg aag gcg ttc ggc gcc gcg cac ctg cac gac ctg 12912
 Ala Val Leu His Ala Lys Ala Phe Gly Ala Ala His Leu His Asp Leu
 4290 4295 4300

acc cgc gac gcc ggc ctc acc acc ttc acc gtc ttc tcc tcg gcc gcc 12960
 Thr Arg Asp Ala Gly Leu Thr Thr Phe Thr Val Phe Ser Ser Ala Ala

4305

4310

4315

4320

gcc tcc ttc ggc agt ccc gga cag ggc aac tac acc gcg gcg aac gcc 13008
 Ala Ser Phe Gly Ser Pro Gly Gln Gly Asn Tyr Thr Ala Ala Asn Ala

4325

4330

4335

ttt ctg gac gcc ctg atg cag cac cgc cac acc cag gca ctg ccg ggc 13056
 Phe Leu Asp Ala Leu Met Gln His Arg His Thr Gln Ala Leu Pro Gly

4340

4345

4350

cgg tcg ctc gcc tgg ggc ctt tgg ggc gag gcc gac ggc atg acc cgc 13104
 Arg Ser Leu Ala Trp Gly Leu Trp Gly Glu Ala Asp Gly Met Thr Arg

4355

4360

4365

aac ctc gcc ggc acc gac ttc gcg cgc atg gcc cgc ggc ggc ctg ctc 13152
 Asn Leu Ala Gly Thr Asp Phe Ala Arg Met Ala Arg Gly Gly Leu Leu

4370

4375

4380

ccc ctg tcc aac gca cag gga ctc gcg ctc ctc gac aca gcg gat cgc 13200
 Pro Leu Ser Asn Ala Gln Gly Leu Ala Leu Leu Asp Thr Ala Asp Arg

4385

4390

4395

4400

ctc ggc cct ttc ggt gac ggg ctg ctc ctc gcc acc cgg ctc gac gcg 13248
 Leu Gly Pro Phe Gly Asp Gly Leu Leu Leu Ala Thr Arg Leu Asp Ala

4405

4410

4415

gcc acc ctc cac gca cag gcc acg gcc ggc gcc ctg ccg cgc atc ctg 13296
 Ala Thr Leu His Ala Gln Ala Thr Ala Gly Ala Leu Pro Arg Ile Leu

4420

4425

4430

cac ggg ctg atc cgc atc ccg gcc cgg cgg tcc gcc gac cac ggc atc 13344
 His Gly Leu Ile Arg Ile Pro Ala Arg Arg Ser Ala Asp His Gly Ile

4435

4440

4445

gcg acc gac acc ccc gcc acg ctg cgc gag cgc ctg gcc gga ctc acc 13392
 Ala Thr Asp Thr Pro Ala Thr Leu Arg Glu Arg Leu Ala Gly Leu Thr

4450

4455

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atc ccc gcg cag cgc acc ggt ctc ctc ctg gaa ctc gta cgg acc cat 13440
 Ile Pro Ala Gln Arg Thr Gly Leu Leu Leu Glu Leu Val Arg Thr His
 4465 4470 4475 4480

gcc gcc gcc gtc ctc ggc cac ccc acc agc gcc gtc aca gcc gcg gac 13488
 Ala Ala Ala Val Leu Gly His Pro Thr Ser Ala Val Thr Ala Ala Asp
 4485 4490 4495

ggc gca ctc ccg gac gat ctg gtc ccg gcc gac acc gag ttc cgc gac 13536
 Gly Ala Leu Pro Asp Asp Leu Val Pro Ala Asp Thr Glu Phe Arg Asp
 4500 4505 4510

ctc ggc ttc gac tcg ctg acc gcc gtc gaa ctc cgc aac cgg atc aac 13584
 Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Ile Asn
 4515 4520 4525

gcc gtc acc ggc ctg cgc ctc ccg gca acg ctc atc ttc gac cag ccc 13632
 Ala Val Thr Gly Leu Arg Leu Pro Ala Thr Leu Ile Phe Asp Gln Pro
 4530 4535 4540

agc ccc gcg gca ctc gcc gat cac ctc gcg acc cgc ctg acg gcc gag 13680
 Ser Pro Ala Ala Leu Ala Asp His Leu Ala Thr Arg Leu Thr Ala Glu
 4545 4550 4555 4560

gcg ggc acg ccg gac gag ccg gcc cct gcc gcc gcg gca gcc ggg gcc 13728
 Ala Gly Thr Pro Asp Glu Pro Ala Pro Ala Ala Ala Ala Ala Gly Ala
 4565 4570 4575

ggg agc gca ggg agt gcc gag acc gga cag cag cgc agt acg ggg agc 13776
 Gly Ser Ala Gly Ser Ala Glu Thr Gly Gln Gln Arg Ser Thr Gly Ser
 4580 4585 4590

gag aag cag cag acc agg ggc ggc acc tcc acc gaa acc gtc gaa tcc 13824
 Glu Lys Gln Gln Thr Arg Gly Gly Thr Ser Thr Glu Thr Val Glu Ser
 4595 4600 4605

ctg ttc tgg atc gga cac gac acc cgc cgc atc gag gag tcc atg gcc 13872
 Leu Phe Trp Ile Gly His Asp Thr Arg Arg Ile Glu Glu Ser Met Ala

4610

4615

4620

ctg ctc tcg gcg gcc tcc ttc ttc cgg ccc gcc ttc acg gac ccc tcg 13920
 Leu Leu Ser Ala Ala Ser Phe Phe Arg Pro Ala Phe Thr Asp Pro Ser
 4625 4630 4635 4640

gac atc ccg gag ccg acg ttc gtc cgg ctc gcc cag ggt gaa gcg cgc 13968
 Asp Ile Pro Glu Pro Thr Phe Val Arg Leu Ala Gln Gly Glu Ala Arg
 4645 4650 4655

gcc caa ggt gaa gca ctc gcc cgg ggc gaa aca cgg ccc gcc ctc atc 14016
 Ala Gln Gly Glu Ala Leu Ala Arg Gly Glu Thr Arg Pro Ala Leu Ile
 4660 4665 4670

tgc ctg ccc acc gtc gcc gcc gtg tcg agc gtg tac cag tac tca cgt 14064
 Cys Leu Pro Thr Val Ala Ala Val Ser Ser Val Tyr Gln Tyr Ser Arg
 4675 4680 4685

ttc gcg gcg gga ctg aac gga cac cga gac gtc tgg tac gtt cct gcg 14112
 Phe Ala Ala Gly Leu Asn Gly His Arg Asp Val Trp Tyr Val Pro Ala
 4690 4695 4700

cca ggg ttc ctg gag ggc gaa ccc ctg ccg tcc gga atc ggc gcg gtg 14160
 Pro Gly Phe Leu Glu Gly Glu Pro Leu Pro Ser Gly Ile Gly Ala Val
 4705 4710 4715 4720

acc cgc atg ttc gcc gac gcg atc gtc cgg ttc acc gac ggc gcg cct 14208
 Thr Arg Met Phe Ala Asp Ala Ile Val Arg Phe Thr Asp Gly Ala Pro
 4725 4730 4735

ttt gcg ctc gcc ggg cat tcc gcg ggc gga tgg ttc gtc tac gcg gtg 14256
 Phe Ala Leu Ala Gly His Ser Ala Gly Gly Trp Phe Val Tyr Ala Val
 4740 4745 4750

acg agt cat ctg gag cgt cta ggc gtc cgt ccg gaa gcg gtg gtg acc 14304
 Thr Ser His Leu Glu Arg Leu Gly Val Arg Pro Glu Ala Val Val Thr
 4755 4760 4765

atg gac gcc tat ctc ccg gac gac ggc atc gca cct gtc gcg tcc gcg 14352
Met Asp Ala Tyr Leu Pro Asp Asp Gly Ile Ala Pro Val Ala Ser Ala
4770 4775 4780

ctg aca agt gaa atc ttc gac cgc gtc acg cag ttt gtg gac gtg gac 14400
Leu Thr Ser Glu Ile Phe Asp Arg Val Thr Gln Phe Val Asp Val Asp
4785 4790 4795 4800

tac aca cgc ctg gtc gcc atg ggc gga tac ttc cgc atc ttc tcc ggc 14448
Tyr Thr Arg Leu Val Ala Met Gly Gly Tyr Phe Arg Ile Phe Ser Gly
4805 4810 4815

tgg agt cct ccg gac atc acc aca ccc gcc ctc ttc ctg cgc ggc cgg 14496
Trp Ser Pro Pro Asp Ile Thr Thr Pro Ala Leu Phe Leu Arg Gly Arg
4820 4825 4830

gac gga gaa cag atg ccg ccg ccg tgg gga gtt ccg cac acc gtt ctg 14544
Asp Gly Glu Gln Met Pro Pro Pro Trp Gly Val Pro His Thr Val Leu
4835 4840 4845

gac atc cag ggg aat cac ttc acg atg ctg gaa cag ttt gcg gat tcg 14592
Asp Ile Gln Gly Asn His Phe Thr Met Leu Glu Gln Phe Ala Asp Ser
4850 4855 4860

act gct cgg cat gtc gac gaa tgg ctg aca gaa atc gca tca gtg cgg 14640
Thr Ala Arg His Val Asp Glu Trp Leu Thr Glu Ile Ala Ser Val Arg
4865 4870 4875 4880

cgc tgatcgcgcc tctgatcgcg gtcctgatcg cggccctgat cggcgggtcg 14693
Arg

ggcacagccc ggtcggccgg tcggccagtc ggccagtcgg tggatatccgg tcggctccgg 14753

catcgatcag tgctttcccc cttacggcca tacgggcctt tctgagactt cttgaatttg 14813

ggagacagtg atg gac acg tcc agc gaa aag ctc gtc gac gcg ctt agg 14862
Met Asp Thr Ser Ser Glu Lys Leu Val Asp Ala Leu Arg
4885 4890

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gcg tct ctg aag gcg aac cag acc ctg cgg gca cgt aat gag caa ctg 14910
 Ala Ser Leu Lys Ala Asn Gln Thr Leu Arg Ala Arg Asn Glu Gln Leu
 4895 4900 4905 4910
 gca gcc gcc atg gag gcg tcc agc gag ccg att gcg att gtg ggg atg 14958
 Ala Ala Ala Met Glu Ala Ser Ser Glu Pro Ile Ala Ile Val Gly Met
 4915 4920 4925
 gcg tgt cgt ttt ccg ggt ggg gtg tgt tcg ccg gag gag ttg tgg gag 15006
 Ala Cys Arg Phe Pro Gly Gly Val Cys Ser Pro Glu Glu Leu Trp Glu
 4930 4935 4940
 ctg gtt gcg tcg ggt ggg gat gcg att ggt gaa ttt ccg gcc ggt cgg 15054
 Leu Val Ala Ser Gly Gly Asp Ala Ile Gly Glu Phe Pro Ala Gly Arg
 4945 4950 4955
 ggg tgg gat ctg gag ggg ttg ttt gat tcg gac cct gac cgg tcg ggg 15102
 Gly Trp Asp Leu Glu Gly Leu Phe Asp Ser Asp Pro Asp Arg Ser Gly
 4960 4965 4970
 acg tcg tac gcg cgg tat ggc ggg ttt ttg tat gag gcg ggg gag ttc 15150
 Thr Ser Tyr Ala Arg Tyr Gly Gly Phe Leu Tyr Glu Ala Gly Glu Phe
 4975 4980 4985 4990
 gat gcg gac ttc ttc ggg atc agt ccg cgt gag gcg ttg gcg atg gat 15198
 Asp Ala Asp Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp
 4995 5000 5005
 ccg cag cag cgg ttg ttg ctg gag acg tcg tgg gag gcg ttc gag cgg 15246
 Pro Gln Gln Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Arg
 5010 5015 5020
 gcg ggt atc gat ccg ctg tcg atg cgt ggc tcc cgt acg ggt gtc ttc 15294
 Ala Gly Ile Asp Pro Leu Ser Met Arg Gly Ser Arg Thr Gly Val Phe
 5025 5030 5035
 gcc ggg gtg atg tac cac gac tac gga tcc cgc ctg ggt acc atc ccc 15342
 Ala Gly Val Met Tyr His Asp Tyr Gly Ser Arg Leu Gly Thr Ile Pro

5040

5045

5050

gag gga ttc gag ggc tac atc ggc aac ggt agc ggc ggc gcc gtc gcg 15390
 Glu Gly Phe Glu Gly Tyr Ile Gly Asn Gly Ser Gly Gly Ala Val Ala
 5055 5060 5065 5070

tcg ggc cgc gtc gcc tac acg ctc ggt ctc gag ggc cct gcc gtc tcg 15438
 Ser Gly Arg Val Ala Tyr Thr Leu Gly Leu Glu Gly Pro Ala Val Ser
 5075 5080 5085

gtg gac acg gca tgt tcg tcg tcg ttg gtg gcg ctg cat ctg gcg tgc 15486
 Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys
 5090 5095 5100

cag tcg ctg cgg tcg ggt gag tgc acg ctc gcg ctg gcc ggc ggt gtg 15534
 Gln Ser Leu Arg Ser Gly Glu Cys Thr Leu Ala Leu Ala Gly Gly Val
 5105 5110 5115

acg gtg atg tcg acc ccg cac ctc ttc gtc gag ttc tca cgc cag gcg 15582
 Thr Val Met Ser Thr Pro His Leu Phe Val Glu Phe Ser Arg Gln Arg
 5120 5125 5130

gga ctg tcg gtg gac ggc cgc tgc aag tcc ttc gcg ggt gga gcc gac 15630
 Gly Leu Ser Val Asp Gly Arg Cys Lys Ser Phe Ala Gly Gly Ala Asp
 5135 5140 5145 5150

ggc acc ggc atg ggc gag ggc gtc ggg atg ctg ttg gtg gag cgg ttg 15678
 Gly Thr Gly Met Gly Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu
 5155 5160 5165

tcg gat gcg gtg cgg ctg ggg cat cgg gtg ctg gcg gtg ctg cgc ggc 15726
 Ser Asp Ala Val Arg Leu Gly His Arg Val Leu Ala Val Leu Arg Gly
 5170 5175 5180

agt gcg gtc aat cag gac ggt gcg tcg aat ggg ttg acg gcg ccg aat 15774
 Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn
 5185 5190 5195

ggt ccg gct cag gag cgg gtg atc cgg cag gcg ttg gcg aac gcg ggg 15822
 Gly Pro Ala Gln Glu Arg Val Ile Arg Gln Ala Leu Ala Asn Ala Gly
 5200 5205 5210

ttg tcc gtg gcg gat gtg gat gtg gtg gag ggg cat ggg acg ggc acg 15870
 Leu Ser Val Ala Asp Val Asp Val Val Glu Gly His Gly Thr Gly Thr
 5215 5220 5225 5230

acg ctg ggt gat ccg atc gag gcg cag gcg ttg ctc gcc acg tac ggg 15918
 Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly
 5235 5240 5245

cag cgg gcc ggt aac agg ccg ctg tgg ctg gga tcg gtg aag tcg aac 15966
 Gln Arg Ala Gly Asn Arg Pro Leu Trp Leu Gly Ser Val Lys Ser Asn
 5250 5255 5260

atc ggc cat gcg cag gct gcc gcg ggt gtg ggt ggg gtc atc aag atg 16014
 Ile Gly His Ala Gln Ala Ala Ala Gly Val Gly Gly Val Ile Lys Met
 5265 5270 5275

gtg atg gcg ttg cgg gag ggg gtg ttg ccg cgg acg ttg cat gtg gat 16062
 Val Met Ala Leu Arg Glu Gly Val Leu Pro Arg Thr Leu His Val Asp
 5280 5285 5290

gag ccg tcg ccg cag gtg gac tgg tcc gcg ggg gcg gtg cgg ctg ctg 16110
 Glu Pro Ser Pro Gln Val Asp Trp Ser Ala Gly Ala Val Arg Leu Leu
 5295 5300 5305 5310

acg gag gcg gtg ccg tgg ccg ggg gac gcg gca ggg cgg ttg cgg cgg 16158
 Thr Glu Ala Val Pro Trp Pro Gly Asp Ala Ala Gly Arg Leu Arg Arg
 5315 5320 5325

gcg gga gtg tcg tcg ttc ggg gtc agt ggc acg aat gcg cat gtg att 16206
 Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile
 5330 5335 5340

ttg gag gag gcg ccg gcg gcg ggg ggc tgt gtt gcc ggg ggt ggg gtg 16254
 Leu Glu Glu Ala Pro Ala Ala Gly Gly Cys Val Ala Gly Gly Gly Val

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5345	5350	5355	
ttg gag ggt gct ccg ggt ctt gcc att tcg gtg gct gag tcg gtg gcc			16302
Leu Glu Gly Ala Pro Gly Leu Ala Ile Ser Val Ala Glu Ser Val Ala			
5360	5365	5370	
gct cca gtg gct gtg tct gcg ccg gtg gct gag tcg gtg ccg gtg ccg			16350
Ala Pro Val Ala Val Ser Ala Pro Val Ala Glu Ser Val Pro Val Pro			
5375	5380	5385	5390
gtg ccg gtg ccg gtt cct gtg ccg gtg tcg gct agg tct gag gct ggg			16398
Val Pro Val Pro Val Pro Val Pro Val Ser Ala Arg Ser Glu Ala Gly			
5395	5400	5405	
ttg cgg gcg cag gcg gag gcg ttg cgt cag tac gtg gca gtc cgg ccg			16446
Leu Arg Ala Gln Ala Glu Ala Leu Arg Gln Tyr Val Ala Val Arg Pro			
5410	5415	5420	
gac gtt tcg ctt gcc gat gtg ggt gcg ggt ctg gcc tgt ggg ccg gct			16494
Asp Val Ser Leu Ala Asp Val Gly Ala Gly Leu Ala Cys Gly Arg Ala			
5425	5430	5435	
gtg ctg gag cat cgt gcg gtc gtc ctg gcc gcg gac cgt gag gag ctg			16542
Val Leu Glu His Arg Ala Val Val Leu Ala Ala Asp Arg Glu Glu Leu			
5440	5445	5450	
gtg caa ggg ttg ggg gcg ctg gcg gcg ggt gag ccg gat ccg ccg gtg			16590
Val Gln Gly Leu Gly Ala Leu Ala Ala Gly Glu Pro Asp Arg Arg Val			
5455	5460	5465	5470
acc acg ggt cat gcg ccg ggt ggt gac ccg ggc ggt gtc gtc ttc gtg			16638
Thr Thr Gly His Ala Pro Gly Gly Asp Arg Gly Gly Val Val Phe Val			
5475	5480	5485	
ttt ccc gga cag ggt ggg cag tgg gcc ggg atg ggt gtg cgt ctg ctc			16686
Phe Pro Gly Gln Gly Gly Gln Trp Ala Gly Met Gly Val Arg Leu Leu			
5490	5495	5500	

gcc tcc tct ccg gtg ttc gcc cgg cgg atg cag gcg tgc gag gag gct 16734
Ala Ser Ser Pro Val Phe Ala Arg Arg Met Gln Ala Cys Glu Glu Ala
5505 5510 5515

ctg gcg ccg tgg gtg gac tgg tct gtg gtg gac atc ctg cgc cgg gac 16782
Leu Ala Pro Trp Val Asp Trp Ser Val Val Asp Ile Leu Arg Arg Asp
5520 5525 5530

gcg ggg gat gcg gtg tgg gag cgg gcc gat gtg gtc cag cct gtg ctg 16830
Ala Gly Asp Ala Val Trp Glu Arg Ala Asp Val Val Gln Pro Val Leu
5535 5540 5545 5550

ttc agc gtc atg gtg tct ttg gct gct ctg tgg cgt tcc tac ggt atc 16878
Phe Ser Val Met Val Ser Leu Ala Ala Leu Trp Arg Ser Tyr Gly Ile
5555 5560 5565

gaa ccc gac gcg gtc ctt ggc cat tcc cag ggc gag atc gcg gcc gcg 16926
Glu Pro Asp Ala Val Leu Gly His Ser Gln Gly Glu Ile Ala Ala Ala
5570 5575 5580

cat gtg tgt ggg gcg ctg agc ctg aag gac gcg gcg aag act gtt gcg 16974
His Val Cys Gly Ala Leu Ser Leu Lys Asp Ala Ala Lys Thr Val Ala
5585 5590 5595

ctg cgc agc cgg gcg ctg gcc gct gtg cgg ggc cgg ggc ggc atg gcc 17022
Leu Arg Ser Arg Ala Leu Ala Ala Val Arg Gly Arg Gly Gly Met Ala
5600 5605 5610

tca gtg ccg ctg cct gcc cag gag gtg gag cag ctc att ggt gag cgg 17070
Ser Val Pro Leu Pro Ala Gln Glu Val Glu Gln Leu Ile Gly Glu Arg
5615 5620 5625 5630

tgg gcg ggg cgg ttg tgg gtg gcg gcg gtc aac ggc ccc cgc tcc acc 17118
Trp Ala Gly Arg Leu Trp Val Ala Ala Val Asn Gly Pro Arg Ser Thr
5635 5640 5645

gcc gtc tcg ggg gat gcc gag gcg gtg gac gag gtg ctg gcg tac tgt 17166
Ala Val Ser Gly Asp Ala Glu Ala Val Asp Glu Val Leu Ala Tyr Cys

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5650

5655

5660

gcc ggc acc ggg gtg cgg gcc cgg cgg atc ccg gtc gac tat gcc tcg 17214
Ala Gly Thr Gly Val Arg Ala Arg Arg Ile Pro Val Asp Tyr Ala Ser
5665 5670 5675

cac tgc ccc cat gtg cag ccc ctg cgg gag gag ttg ctg gag ctg ctg 17262
His Cys Pro His Val Gln Pro Leu Arg Glu Glu Leu Leu Glu Leu Leu
5680 5685 5690

ggg gac atc agc ccg cag ccg tcc ggc gtg ccg ttc ttc tcc acg gtg 17310
Gly Asp Ile Ser Pro Gln Pro Ser Gly Val Pro Phe Phe Ser Thr Val
5695 5700 5705 5710

gag ggc acc tgg ctg gac acc aca acc ctg gac gcc gcc tac tgg tac 17358
Glu Gly Thr Trp Leu Asp Thr Thr Thr Leu Asp Ala Ala Tyr Trp Tyr
5715 5720 5725

cgc aac ctg cac cag cct gtc cgt ttc agc gat gcc gtc cag gcc ctg 17406
Arg Asn Leu His Gln Pro Val Arg Phe Ser Asp Ala Val Gln Ala Leu
5730 5735 5740

gcg gat gac gga cac cgc gtc ttc gtc gaa gtc agc ccc cac ccc acc 17454
Ala Asp Asp Gly His Arg Val Phe Val Glu Val Ser Pro His Pro Thr
5745 5750 5755

ctc gtc ccc gcc atc gaa gac acc acc gaa gac acc gcc gaa gac gtc 17502
Leu Val Pro Ala Ile Glu Asp Thr Thr Glu Asp Thr Ala Glu Asp Val
5760 5765 5770

acc gcg atc ggc agc ctc cgc cgc ggc gac aac gac acc cgc cgc ttc 17550
Thr Ala Ile Gly Ser Leu Arg Arg Gly Asp Asn Asp Thr Arg Arg Phe
5775 5780 5785 5790

ctc acc gcc ctc gcc cac acc cac acc acc ggc atc ggc aca ccc acc 17598
Leu Thr Ala Leu Ala His Thr His Thr Thr Gly Ile Gly Thr Pro Thr
5795 5800 5805

acc tgg cac cac cac tac acc cac cac cac acc cac ccc cac aac cac 17646
 Thr Trp His His His Tyr Thr His His His Thr His Pro His Asn His
 5810 5815 5820

cac ctc gac ctc ccc act tat ccc ttc caa cgc cag cac tac tgg ctc 17694
 His Leu Asp Leu Pro Thr Tyr Pro Phe Gln Arg Gln His Tyr Trp Leu
 5825 5830 5835

gac gct ccc acg gga gca ggt gac gtc gcc gct gct ggc ttg gag ccg 17742
 Asp Ala Pro Thr Gly Ala Gly Asp Val Ala Ala Ala Gly Leu Glu Pro
 5840 5845 5850

gcc gaa cac cct ctg ctc gcg gca aca gtc caa ctc gca gac acg gac 17790
 Ala Glu His Pro Leu Leu Ala Ala Thr Val Gln Leu Ala Asp Thr Asp
 5855 5860 5865 5870

ggc tgc cta ctg acg ggt cgc ctg tcc ttg cgc tgc cat ccg tgg ctg 17838
 Gly Cys Leu Leu Thr Gly Arg Leu Ser Leu Arg Ser His Pro Trp Leu
 5875 5880 5885

ggc gat tac gag gtg ggg ggt gcg gtc ctg ctg tgc ggg tgc gcg ttc 17886
 Gly Asp Tyr Glu Val Gly Gly Ala Val Leu Leu Ser Gly Ser Ala Phe
 5890 5895 5900

gtg gag ctg gcg gtc cag gtt ggc gaa cgc gtg ggc tgc acc cga atc 17934
 Val Glu Leu Ala Val Gln Val Gly Glu Arg Val Gly Cys Thr Arg Ile
 5905 5910 5915

gag caa ctc act gtg cat gcg ccg ctg gtg gtt cct gtg ggt ggg ggt 17982
 Glu Gln Leu Thr Val His Ala Pro Leu Val Val Pro Val Gly Gly Gly
 5920 5925 5930

gtg agt gtg cag gtt ggg gtt gcg gct gcg gat ggg gag ggg cgg cgt 18030
 Val Ser Val Gln Val Gly Val Ala Ala Ala Asp Gly Glu Gly Arg Arg
 5935 5940 5945 5950

ttg gtg agt gtg tat gcg cgg ggt ggg agt gct tgt ggt ggg ggt ggt 18078
 Leu Val Ser Val Tyr Ala Arg Gly Gly Ser Ala Cys Gly Gly Gly Gly

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5955	5960	5965	
gcg tcg ggt ggg gtg tgg acg tgt cat gcc tcg ggg gtg ctg gtt gag			18126
Ala Ser Gly Gly Val Trp Thr Cys His Ala Ser Gly Val Leu Val Glu			
5970	5975	5980	
gct gct gct ggt ggt ggt gtg gtg gtg gat ggt ctg gcg ggg gtg tgg			18174
Ala Ala Ala Gly Gly Gly Val Val Val Asp Gly Leu Ala Gly Val Trp			
5985	5990	5995	
ccg ccg cgg ggt gcg gtg gcg gtg gat gtc gat ggt gtc cgt gac cgt			18222
Pro Pro Arg Gly Ala Val Ala Val Asp Val Asp Gly Val Arg Asp Arg			
6000	6005	6010	
ttg gct ggg gct ggt tgt gtt ttg ggg ccg gtg ttt tcg ggg ctg cgt			18270
Leu Ala Gly Ala Gly Cys Val Leu Gly Pro Val Phe Ser Gly Leu Arg			
6015	6020	6025	6030
gcg gtg tgg cgt gat ggg ggg gat ttg ctg gct gag gtg tgt ctg ccg			18318
Ala Val Trp Arg Asp Gly Gly Asp Leu Leu Ala Glu Val Cys Leu Pro			
6035	6040	6045	
gag gag gcg tgg ggt gat gcg gct ggt ttt ggg ctg cat ccg gcg ttg			18366
Glu Glu Ala Trp Gly Asp Ala Ala Gly Phe Gly Leu His Pro Ala Leu			
6050	6055	6060	
ctg gat ggt gtg gtc cag ccg ttg tcg gtg ttg ctt ccg ggt ggg acg			18414
Leu Asp Gly Val Val Gln Pro Leu Ser Val Leu Leu Pro Gly Gly Thr			
6065	6070	6075	
ggg ttt ggg gag ggg gcg ggg ttc ggg gag ggt gtt ccg gtg ccg gct			18462
Gly Phe Gly Glu Gly Ala Gly Phe Gly Glu Gly Val Arg Val Pro Ala			
6080	6085	6090	
gtg tgg ggt ggt gtg tcg ctt cac ccg gcg ggt gtg acc ggt gtg ccg			18510
Val Trp Gly Gly Val Ser Leu His Arg Ala Gly Val Thr Gly Val Arg			
6095	6100	6105	6110

gtg cgt gtg tgg gct gta ggg cgg ggc ggc ggg cgt gag gcg gtg tcg 18558
Val Arg Val Trp Ala Val Gly Arg Gly Gly Gly Arg Glu Ala Val Ser
6115 6120 6125

gtc gtg gtc ggg gat gag gcg ggt gtg ccg gtg gcg tcg gtc gat cgt 18606
Val Val Val Gly Asp Glu Ala Gly Val Pro Val Ala Ser Val Asp Arg
6130 6135 6140

ctt gag ttg cgg cct gtg gat atg ggt cag ttg cgt gct gtc tcg gtt 18654
Leu Glu Leu Arg Pro Val Asp Met Gly Gln Leu Arg Ala Val Ser Val
6145 6150 6155

tcg gcg ggg cgg cgg ggt tcg ctg tat gcg gtg cag tgg gct gag gtg 18702
Ser Ala Gly Arg Arg Gly Ser Leu Tyr Ala Val Gln Trp Ala Glu Val
6160 6165 6170

ggt cct gtg ccg gtg tgt ggg cag gcg tgg gcg tgg cac gag gac gtg 18750
Gly Pro Val Pro Val Cys Gly Gln Ala Trp Ala Trp His Glu Asp Val
6175 6180 6185 6190

ggt gag agc ggt ggt ggg cct gtg ccg ggg gtg gtg gtg ttg cgg tgc 18798
Gly Glu Ser Gly Gly Gly Pro Val Pro Gly Val Val Val Leu Arg Cys
6195 6200 6205

ccg gat gcc ggt gcc ggt ggc ggc ggt ggc ggt ggt gtg ggt gag gtt 18846
Pro Asp Ala Gly Ala Gly Gly Gly Gly Gly Gly Gly Val Gly Glu Val
6210 6215 6220

gtt ggt ggg gtg ttg ggt gtg gtg cag ggg tgg ctg ggg ctg gag cgg 18894
Val Gly Gly Val Leu Gly Val Val Gln Gly Trp Leu Gly Leu Glu Arg
6225 6230 6235

ttt gcg ggt tcg cgg ctg gtg gtg gtg acc cgg ggt gcg gtg gtg gcc 18942
Phe Ala Gly Ser Arg Leu Val Val Val Thr Arg Gly Ala Val Val Ala
6240 6245 6250

ggc caa gaa gac ggc ccg gtg gat gtg gtg ggt gcg gcg gtg tgg ggg 18990
Gly Gln Glu Asp Gly Pro Val Asp Val Val Gly Ala Ala Val Trp Gly

6255

6260

6265

6270

ctg gtg cgg tcg gcg cag gct gag cat ccg gac cgg ttt gtc ctc ctc 19038
 Leu Val Arg Ser Ala Gln Ala Glu His Pro Asp Arg Phe Val Leu Leu
 6275 6280 6285

gac ctc gac acc gac acc gac acc ggc acc gac ctc gac acc ggt gct 19086
 Asp Leu Asp Thr Asp Thr Asp Thr Gly Thr Asp Leu Asp Thr Gly Ala
 6290 6295 6300

ggt gct ggt gct ggt gct ggt tgg ggc gtg gat ggt ggg cat gtg gcg 19134
 Gly Ala Gly Ala Gly Ala Gly Trp Gly Val Asp Gly Gly His Val Ala
 6305 6310 6315

gcg gtg gtg gcg tgt ggt gag ccg cag ttg gcg gtg cgt ggt gag cgg 19182
 Ala Val Val Ala Cys Gly Glu Pro Gln Leu Ala Val Arg Gly Glu Arg
 6320 6325 6330

gtg ctg gcc gca cgc ctg acg cga ctt gag tcg tcc gtt gat gta cct 19230
 Val Leu Ala Ala Arg Leu Thr Arg Leu Glu Ser Ser Val Asp Val Pro
 6335 6340 6345 6350

gct cag cgg tcc ggt gat gtt gct ggt cgg gag gtg ttg ccg tgg ttg 19278
 Ala Gln Arg Ser Gly Asp Val Ala Gly Arg Glu Val Leu Pro Trp Leu
 6355 6360 6365

tcg ggt ggg tcg gtg ttg gtg acg ggt ggg acg ggt gtg ctg ggt gcg 19326
 Ser Gly Gly Ser Val Leu Val Thr Gly Gly Thr Gly Val Leu Gly Ala
 6370 6375 6380

gcg gtg gcg cgg cat ctg gct ggt gtg tgt ggg gtg cgg gat ctg ctg 19374
 Ala Val Ala Arg His Leu Ala Gly Val Cys Gly Val Arg Asp Leu Leu
 6385 6390 6395

ttg gtg agc cgg cgt ggt ccg gat gct ccg ggt gcg gag ggt ttg cgg 19422
 Leu Val Ser Arg Arg Gly Pro Asp Ala Pro Gly Ala Glu Gly Leu Arg
 6400 6405 6410

gcg gag ctg gcc gcg ttg ggg gcg gag gtg cgg att gtt gcg tgt gat 19470
 Ala Glu Leu Ala Ala Leu Gly Ala Glu Val Arg Ile Val Ala Cys Asp
 6415 6420 6425 6430

gtg ggg gag cgg cgg gag gtg gtc cgg ctg ctg gag ggt gtt cct gcc 19518
 Val Gly Glu Arg Arg Glu Val Val Arg Leu Leu Glu Gly Val Pro Ala
 6435 6440 6445

ggg tgt ccg ctg acg ggt gtc gtg cat gcg gct ggt gtg ctg gac gat 19566
 Gly Cys Pro Leu Thr Gly Val Val His Ala Ala Gly Val Leu Asp Asp
 6450 6455 6460

gcg acg atc gcc tct ctc acg ccc gag cgg ctg ggc acg gtg ttc gcg 19614
 Ala Thr Ile Ala Ser Leu Thr Pro Glu Arg Leu Gly Thr Val Phe Ala
 6465 6470 6475

gcc aag gtg gat gcc gct ctt ttg ctg gat gag ctg acg cgg ggt atg 19662
 Ala Lys Val Asp Ala Ala Leu Leu Leu Asp Glu Leu Thr Arg Gly Met
 6480 6485 6490

gag ctg tcg gcg ttc gtg ctg ttc tcc tcg gcc gcg ggg atc ctg ggg 19710
 Glu Leu Ser Ala Phe Val Leu Phe Ser Ser Ala Ala Gly Ile Leu Gly
 6495 6500 6505 6510

tcg gcc ggg cag ggc aac tac gcc gcg gcc aat gcc gct ctg gac gcg 19758
 Ser Ala Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Ala Leu Asp Ala
 6515 6520 6525

ctg gcg tac cgg cgg cgg gcg gcg ggt ctg ccg ggg gtg tcg ctg gcg 19806
 Leu Ala Tyr Arg Arg Arg Ala Ala Gly Leu Pro Gly Val Ser Leu Ala
 6530 6535 6540

tgg ggg ctg tgg gaa gag gcc agc ggg atg acc ggg cac ctg gcc ggc 19854
 Trp Gly Leu Trp Glu Glu Ala Ser Gly Met Thr Gly His Leu Ala Gly
 6545 6550 6555

acc gac cac cgg cgc atc atc cgt tcc ggt ctg cat ccc atg tcg acc 19902
 Thr Asp His Arg Arg Ile Ile Arg Ser Gly Leu His Pro Met Ser Thr

6560

6565

6570

ccg gac gca ctg gct ctc ttc gat gcg gcc ctg gct ctg gac cgg ccg 19950
 Pro Asp Ala Leu Ala Leu Phe Asp Ala Ala Leu Ala Leu Asp Arg Pro
 6575 6580 6585 6590

gtc ctg ctg ccc gcc gac ctg cgt ccc gcc ccg ccc ctg ccg ccc ctg 19998
 Val Leu Leu Pro Ala Asp Leu Arg Pro Ala Pro Pro Leu Pro Pro Leu
 6595 6600 6605

ctg cag gac ctc ctg ccc gcc acc cgc cgc cgc acc acc cgc acc acc 20046
 Leu Gln Asp Leu Leu Pro Ala Thr Arg Arg Arg Thr Thr Arg Thr Thr
 6610 6615 6620

act acc ggt ggt gcg gac aac ggc gcc cag ctg cat gcc cgg ctg gcc 20094
 Thr Thr Gly Gly Ala Asp Asn Gly Ala Gln Leu His Ala Arg Leu Ala
 6625 6630 6635

ggc cag aca cac gaa caa cag cac acc acc ctc ctc gcc ctg gtc cgc 20142
 Gly Gln Thr His Glu Gln Gln His Thr Thr Leu Leu Ala Leu Val Arg
 6640 6645 6650

tcc cac atc gcc acc gtc ctc ggc cac acc acc ccc gac acc atc ccc 20190
 Ser His Ile Ala Thr Val Leu Gly His Thr Thr Pro Asp Thr Ile Pro
 6655 6660 6665 6670

ccc gac cgc gcg ttc cgc gac ctc ggc ttc gac tcc ctc acc gcc gtc 20238
 Pro Asp Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val
 6675 6680 6685

gaa cta cgc aac cgg ctc tcc cgc acc acc gga ctc cgc ctc ccc acc 20286
 Glu Leu Arg Asn Arg Leu Ser Arg Thr Thr Gly Leu Arg Leu Pro Thr
 6690 6695 6700

acc ctc gcc ttc gac cac ccc aac ccc acc acc ctc acc cac cac ctc 20334
 Thr Leu Ala Phe Asp His Pro Asn Pro Thr Thr Leu Thr His His Leu
 6705 6710 6715

cac aca caa ctt ctg ggc tcg gac agc act gcc tcc atc cca gct ccc 20382
 His Thr Gln Leu Leu Gly Ser Asp Ser Thr Ala Ser Ile Pro Ala Pro
 6720 6725 6730

cgt gct gcg gct gtg cct gca gac cag gac gag ccc gtc gcg atc att 20430
 Arg Ala Ala Ala Val Pro Ala Asp Gln Asp Glu Pro Val Ala Ile Ile
 6735 6740 6745 6750

ggc atg gcg tgc cgc tat ccc gga ggc gtc acc tca gcc gag gag ctg 20478
 Gly Met Ala Cys Arg Tyr Pro Gly Gly Val Thr Ser Ala Glu Glu Leu
 6755 6760 6765

tgg gaa ctg ctc gca tcg ggg agg gac acg gtc ggc gag ttt ccg acg 20526
 Trp Glu Leu Leu Ala Ser Gly Arg Asp Thr Val Gly Glu Phe Pro Thr
 6770 6775 6780

gac cgt ggg tgg gac ctg gaa gca ctg ttc gat ccg gaa ccg ggt cgg 20574
 Asp Arg Gly Trp Asp Leu Glu Ala Leu Phe Asp Pro Glu Pro Gly Arg
 6785 6790 6795

ccg ggc acc tcg tac acc cgc tgt ggg agt ttc ctc tac gac gcg ggg 20622
 Pro Gly Thr Ser Tyr Thr Arg Cys Gly Ser Phe Leu Tyr Asp Ala Gly
 6800 6805 6810

gag ttc gac gcc ggc ttc ttc ggg atc agt ccg cgt gag gca ctg gcg 20670
 Glu Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala
 6815 6820 6825 6830

atg gac ccg cag cag cga ttg ctg ctg gag gcc tca tgg gag gcc atg 20718
 Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Ala Ser Trp Glu Ala Met
 6835 6840 6845

gag cag gca ggt att gac cct acg acc gta cgc ggg agc cag aca ggc 20766
 Glu Gln Ala Gly Ile Asp Pro Thr Thr Val Arg Gly Ser Gln Thr Gly
 6850 6855 6860

gtg ttc gcg ggc ctc att ccg cag gcc tat gga ccc agg ctg cac gaa 20814
 Val Phe Ala Gly Leu Ile Pro Gln Ala Tyr Gly Pro Arg Leu His Glu

0914286 082401

6865

6870

6875

aac gcc gca gcc gac acc gag ggc tat gtc ctg acc ggc aca tcc ggg 20862
Asn Ala Ala Ala Asp Thr Glu Gly Tyr Val Leu Thr Gly Thr Ser Gly
6880 6885 6890

agt gtg gcc tcc ggt cgt atc tcg tac acg ttt ggt ttt gag ggt cct 20910
Ser Val Ala Ser Gly Arg Ile Ser Tyr Thr Phe Gly Phe Glu Gly Pro
6895 6900 6905 6910

gcg gtg tcg gtg gac acg gct tgt tcc tcg tcg ttg gtg gct tta cat 20958
Ala Val Ser Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His
6915 6920 6925

ctg gcc tgt cag gcg ttg cgt gcg ggt gag tgc tcg atg gcg ctt gcc 21006
Leu Ala Cys Gln Ala Leu Arg Ala Gly Glu Cys Ser Met Ala Leu Ala
6930 6935 6940

ggg ggt gtg acg gtg atg tcg tct ccg ggt gcc ttc gtg gag ttt tcg 21054
Gly Gly Val Thr Val Met Ser Ser Pro Gly Ala Phe Val Glu Phe Ser
6945 6950 6955

cgg cag cgg ggt ctg gcc gcg gac ggg cat tgc aag gcg ttc tcg gcg 21102
Arg Gln Arg Gly Leu Ala Ala Asp Gly His Cys Lys Ala Phe Ser Ala
6960 6965 6970

gcg gcg gac ggg acc ggc tgg ggt gag ggt gtg ggg atg ctg ctg gtg 21150
Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly Val Gly Met Leu Leu Val
6975 6980 6985 6990

gag cgg ctc tcc gac gcc cgt cgc aac ggt cac cgt gtc ctg gcc gtg 21198
Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly His Arg Val Leu Ala Val
6995 7000 7005

gtg cgt ggc agt gcg gtc aac cag gac ggt gcg agc aac ggg ctg acc 21246
Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr
7010 7015 7020

gcg ccc aac ggg ccc tcc cag cag cgt gtc atc cgc cag gcc ctc gcc 21294
 Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala
 7025 7030 7035

aac gcc ggc ttg tgc gcc ggt gat gtc gat gcg gtg gag gcc cac ggc 21342
 Asn Ala Gly Leu Ser Ala Gly Asp Val Asp Ala Val Glu Ala His Gly
 7040 7045 7050

acc ggc acc act ttg ggc gac ccg atc gag gcc cag gcc ctc ctt gcg 21390
 Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala
 7055 7060 7065 7070

acc tac ggg cag gac cgt gcc ggc gag ggg ccg ctg tgg ctg ggc tgc 21438
 Thr Tyr Gly Gln Asp Arg Ala Gly Glu Gly Pro Leu Trp Leu Gly Ser
 7075 7080 7085

gtc aag tcc aat gtc ggt cac aca cag gct gcc gcg ggc gtc gcc ggg 21486
 Val Lys Ser Asn Val Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly
 7090 7095 7100

gtg atc aag atg gtg atg gcg ctg cgg aat ggt ctg ctg ccg cgg acg 21534
 Val Ile Lys Met Val Met Ala Leu Arg Asn Gly Leu Leu Pro Arg Thr
 7105 7110 7115

ttg cat gtg gat gag ccg tgc ccg cat gtg gac tgg tcc gcg ggt gcg 21582
 Leu His Val Asp Glu Pro Ser Pro His Val Asp Trp Ser Ala Gly Ala
 7120 7125 7130

gtg cag ctg ctg acg gag acg gtg ccc tgg ccc ggc ggg gag ggg ccg 21630
 Val Gln Leu Leu Thr Glu Thr Val Pro Trp Pro Gly Gly Glu Gly Arg
 7135 7140 7145 7150

cta cgg cgg gca gga gtg tca tca ttc ggc gtc agc ggc acc aac gcc 21678
 Leu Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala
 7155 7160 7165

cac gtc atc ctc gaa gaa gca ccc gcc cac aac atc ccg tca gac aca 21726
 His Val Ile Leu Glu Glu Ala Pro Ala His Asn Ile Pro Ser Asp Thr

7170

7175

7180

ccc gcc gac gac gtt ccg ggg gga cca ccc gcc ggc gag gat gcc ggt 21774
Pro Ala Asp Asp Val Pro Gly Gly Pro Pro Ala Gly Glu Asp Ala Gly
7185 7190 7195

agt ggc gag gag gct gct gcc ggc agt cca ggg gtg tgg ccg tgg ctg 21822
Ser Gly Glu Glu Ala Ala Ala Gly Ser Pro Gly Val Trp Pro Trp Leu
7200 7205 7210

gtg tcg gcc aag tcg cag ccg gcc ctg cgc gcc cag gcc cag gcc ctg 21870
Val Ser Ala Lys Ser Gln Pro Ala Leu Arg Ala Gln Ala Gln Ala Leu
7215 7220 7225 7230

cac gcc cac ctc acc gac cac ccc ggc ctc gac ctc gcc gac gtc gga 21918
His Ala His Leu Thr Asp His Pro Gly Leu Asp Leu Ala Asp Val Gly
7235 7240 7245

tac acc ctc gcc cac gcc cgc gcc gtg ttc gac cac cgc gcc acc ctc 21966
Tyr Thr Leu Ala His Ala Arg Ala Val Phe Asp His Arg Ala Thr Leu
7250 7255 7260

atc gcc gcc gac cgc gac acc ttc ctg caa gca ctc cag gca ctc gcc 22014
Ile Ala Ala Asp Arg Asp Thr Phe Leu Gln Ala Leu Gln Ala Leu Ala
7265 7270 7275

gca ggc gaa ccc cac ccc gcc gtc atc cac agc agc gcc cca ggc ggg 22062
Ala Gly Glu Pro His Pro Ala Val Ile His Ser Ser Ala Pro Gly Gly
7280 7285 7290

acc ggg acc ggg gag gcc gca gga aag acc gca ttc atc tgc tcc gga 22110
Thr Gly Thr Gly Glu Ala Ala Gly Lys Thr Ala Phe Ile Cys Ser Gly
7295 7300 7305 7310

cag ggc acc caa cgc ccc ggc atg gcc cac ggc ctc tac cac acc cac 22158
Gln Gly Thr Gln Arg Pro Gly Met Ala His Gly Leu Tyr His Thr His
7315 7320 7325

ccc gtc ttc gcc gcc gca ctc aac gac atc tgc acc cac ctc gac ccc 22206
Pro Val Phe Ala Ala Ala Leu Asn Asp Ile Cys Thr His Leu Asp Pro
7330 7335 7340

cac ctc gac cac ccc ctc ctc ccc ctc ctc acc cag gac ccc aac acc 22254
His Leu Asp His Pro Leu Leu Pro Leu Leu Thr Gln Asp Pro Asn Thr
7345 7350 7355

cag gac acc acc acc ctc gaa gaa gcg gcc gca ctg ctc cag cag acc 22302
Gln Asp Thr Thr Thr Leu Glu Glu Ala Ala Ala Leu Leu Gln Gln Thr
7360 7365 7370

ccg tac gcc cag ccc gcc ctc ttc gcc ttc cag gtc gcc ctc cac cgc 22350
Pro Tyr Ala Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg
7375 7380 7385 7390

ctc ctc acc gac ggc tac cac atc acc ccc cac tac tac gcc gga cac 22398
Leu Leu Thr Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His
7395 7400 7405

tcc ctc ggc gaa atc acc gcc gcc cac ctc gcc ggc atc ctc acc ctc 22446
Ser Leu Gly Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu
7410 7415 7420

acc gac gcc acc acc ctc atc acc caa cgc gcc acc ctc atg caa acc 22494
Thr Asp Ala Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr
7425 7430 7435

atg ccc ccc ggc acc atg acc acc ctc cac acc acc ccc cac cac atc 22542
Met Pro Pro Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile
7440 7445 7450

acc cac cac atc acc gcc cac gaa aac gac ctc gcc atc gcc gcc atc 22590
Thr His His Ile Thr Ala His Glu Asn Asp Leu Ala Ile Ala Ala Ile
7455 7460 7465 7470

aac acc ccc acc tcc ctc gtc atc agc ggc acc ccc cac acc gtc caa 22638
Asn Thr Pro Thr Ser Leu Val Ile Ser Gly Thr Pro His Thr Val Gln

7475

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cac atc acc acc ctc tgc caa caa caa ggc atc aaa acc aaa acc ctc 22686
His Ile Thr Thr Leu Cys Gln Gln Gln Gly Ile Lys Thr Lys Thr Leu

7490

7495

7500

ccc acc aac cac gcc ttc cac tcc ccc cac acc aac ccc atc ctc aac 22734
Pro Thr Asn His Ala Phe His Ser Pro His Thr Asn Pro Ile Leu Asn

7505

7510

7515

caa ctc cac cag cac acc caa acc ctc acc tac cac cca ccc cac acc 22782
Gln Leu His Gln His Thr Gln Thr Leu Thr Tyr His Pro Pro His Thr

7520

7525

7530

ccc ctc atc acc gcc aac acc cca ccc gac caa ctc ctc acc ccc cac 22830
Pro Leu Ile Thr Ala Asn Thr Pro Pro Asp Gln Leu Leu Thr Pro His

7535

7540

7545

7550

tac tgg acc caa caa gcc cgc aac acc gtc gac ata gcc acc acc acc 22878
Tyr Trp Thr Gln Gln Ala Arg Asn Thr Val Asp Ile Ala Thr Thr Thr

7555

7560

7565

caa acc ctc cac caa cac ggc gtc acc acc tac atc gaa ctc gga ccc 22926
Gln Thr Leu His Gln His Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro

7570

7575

7580

gac aac acc ctc acc acc ctc acc cac cac aac ctc ccc aac acc ccc 22974
Asp Asn Thr Leu Thr Thr Leu Thr His His Asn Leu Pro Asn Thr Pro

7585

7590

7595

acc acc acc ctc acc ctc acc cac ccc cac cac cac ccc caa acc cac 23022
Thr Thr Thr Leu Thr Leu Thr His Pro His His His Pro Gln Thr His

7600

7605

7610

ctc ctc acc aac ctc gcc aaa acc acc acc acc tgg cac ccc cac cac 23070
Leu Leu Thr Asn Leu Ala Lys Thr Thr Thr Thr Trp His Pro His His

7615

7620

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tac acc cac cac cac aac caa ccc cac acc cac acc cac ctc gac ctc Tyr Thr His His His Asn Gln Pro His Thr His Thr His Leu Asp Leu	23118
7635 7640 7645	
ccc acc tac ccc ttc caa cac cac cac tac tgg ctc gaa agc aca cag Pro Thr Tyr Pro Phe Gln His His His Tyr Trp Leu Glu Ser Thr Gln	23166
7650 7655 7660	
ccc ggt gcc ggc aac gtg tca gca gcc gga ctc gac ccc acc gaa cac Pro Gly Ala Gly Asn Val Ser Ala Ala Gly Leu Asp Pro Thr Glu His	23214
7665 7670 7675	
ccc cta ctc ggc gcc aca ttg gaa ctg gcc gaa ggg gac ggc tgc cta Pro Leu Leu Gly Ala Thr Leu Glu Leu Ala Glu Gly Asp Gly Cys Leu	23262
7680 7685 7690	
ctg acg ggg cgc ctc tgc ttg cgc acg cat ccc tgg ctc gcc ggc cat Leu Thr Gly Arg Leu Ser Leu Arg Thr His Pro Trp Leu Ala Gly His	23310
7695 7700 7705 7710	
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7715 7720 7725	
gcc ctt cat gcc gga gaa agt gtg ggt tgc gac cac gtg gac gag ctg Ala Leu His Ala Gly Glu Ser Val Gly Cys Asp His Val Asp Glu Leu	23406
7730 7735 7740	
acg ctc cac aca ccg ttg gtc att cct gag gtc gga gac gtg acc ctt Thr Leu His Thr Pro Leu Val Ile Pro Glu Val Gly Asp Val Thr Leu	23454
7745 7750 7755	
cag gtt gcc att gcg gcg ccg gac gag tgc ggt cgc cgc atg atg acc Gln Val Ala Ile Ala Ala Pro Asp Glu Ser Gly Arg Arg Met Met Thr	23502
7760 7765 7770	
atc cac tca cgc ggt gag ggc ggc agt ggt gga gcc gat gcg tgc gcc Ile His Ser Arg Gly Glu Gly Gly Ser Gly Gly Ala Asp Ala Ser Ala	23550

7775

7780

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7790

agt gcg tgg acg cgt cat gcc gcg ggt gtg ctg agc cct gcc aag gac 23598
 Ser Ala Trp Thr Arg His Ala Ala Gly Val Leu Ser Pro Ala Lys Asp

7795

7800

7805

gat gac act gcc tcg tac gag ctg ctt gcg gga ccc tgg cct ccc gtt 23646
 Asp Asp Thr Ala Ser Tyr Glu Leu Leu Ala Gly Pro Trp Pro Pro Val

7810

7815

7820

gga gct acg cct gtc gac ctg aac acg gct tac gat caa atg gcc gac 23694
 Gly Ala Thr Pro Val Asp Leu Asn Thr Ala Tyr Asp Gln Met Ala Asp

7825

7830

7835

gcc ggc ttt gct tat ggc ctg gca ttc caa ggg ttg cgc gcg gcc tgg 23742
 Ala Gly Phe Ala Tyr Gly Leu Ala Phe Gln Gly Leu Arg Ala Ala Trp

7840

7845

7850

cgc tac ggc gac gac atc ctc gtc gag gca cgt ctt ccc gaa gaa gtg 23790
 Arg Tyr Gly Asp Asp Ile Leu Val Glu Ala Arg Leu Pro Glu Glu Val

7855

7860

7865

7870

tcg gga gac gcg gcg gcg tac ggt ctg cac ccg gcc ctg ctc gac gct 23838
 Ser Gly Asp Ala Ala Ala Tyr Gly Leu His Pro Ala Leu Leu Asp Ala

7875

7880

7885

gcc ctt cag ggc acc ggc ctg ctt tct gtg gcg ggt ccg ggg acg ccc 23886
 Ala Leu Gln Gly Thr Gly Leu Leu Ser Val Ala Gly Pro Gly Thr Pro

7890

7895

7900

gtc gtg ccc cat gtg tgg aac ggt ctg cgg ttc cgt acg cat ggt gca 23934
 Val Val Pro His Val Trp Asn Gly Leu Arg Phe Arg Thr His Gly Ala

7905

7910

7915

gtc tcc gtg cgc gcg tgc ctg tcg acg ctt gga gcg aca ggg gcg gcc 23982
 Val Ser Val Arg Ala Cys Leu Ser Thr Leu Gly Ala Thr Gly Ala Ala

7920

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gtg tgc gtg cgc atc acc gac gac acc ggg gtg ccg gtg gcg tgc gtc 24030
Val Cys Val Arg Ile Thr Asp Asp Thr Gly Val Pro Val Ala Ser Val
7935 7940 7945 7950

gat cgt ctt gag ttg cgg cct gtg gat atg ggt cag ttg cgt gct gtc 24078
Asp Arg Leu Glu Leu Arg Pro Val Asp Met Gly Gln Leu Arg Ala Val
7955 7960 7965

tcg gtt tcg gcg ggg cgg cgg ggt tcg ctg tat gcg gtg cag tgg gct 24126
Ser Val Ser Ala Gly Arg Arg Gly Ser Leu Tyr Ala Val Gln Trp Ala
7970 7975 7980

gag gtg ggt cct gtg ccg gtg tgt ggg cag gcg tgg gcg tgg cac gag 24174
Glu Val Gly Pro Val Pro Val Cys Gly Gln Ala Trp Ala Trp His Glu
7985 7990 7995

gac gtg ggt gag agc ggt ggt ggg cct gtg ccg ggg gtg gtg gtg ttg 24222
Asp Val Gly Glu Ser Gly Gly Gly Pro Val Pro Gly Val Val Val Leu
8000 8005 8010

cgg tgc ccg gat gcc ggt gcc gat ggc ggc ggt ggc ggt ggt gtg ggt 24270
Arg Cys Pro Asp Ala Gly Ala Asp Gly Gly Gly Gly Gly Gly Val Gly
8015 8020 8025 8030

gag gtt gtt ggt ggg gtg ttg ggt gtg gtg cag ggg tgg ctg ggg ctg 24318
Glu Val Val Gly Gly Val Leu Gly Val Val Gln Gly Trp Leu Gly Leu
8035 8040 8045

gag cgg ttt gcg ggt tcg cgg ctg gtg gtg gtg acc cgg ggt gcg gtg 24366
Glu Arg Phe Ala Gly Ser Arg Leu Val Val Val Thr Arg Gly Ala Val
8050 8055 8060

gtg gcc ggc ccg gag gac ggc ccg gtg gat gtg gtg ggt gcg gcg gtg 24414
Val Ala Gly Pro Glu Asp Gly Pro Val Asp Val Val Gly Ala Ala Val
8065 8070 8075

tgg ggg ctg gtg cgg tcg gcg cag gct gag cat ccg gac cgg ttt gtc 24462
Trp Gly Leu Val Arg Ser Ala Gln Ala Glu His Pro Asp Arg Phe Val

8080

8085

8090

ctc ctc gac ctg gac acc gac ctc gac agc ggc gct gac gcc gat gcc 24510
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 8095 8100 8105 8110

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 Gly Asn Glu Ala Gly Met Gly Ser Gly Leu Asp Gly Gly Arg Val Ala
 8115 8120 8125

gcg gtg gtg gcg tgt ggt gag ccg cag ttg gcg gtg cgt ggt gag cgg 24606
 Ala Val Val Ala Cys Gly Glu Pro Gln Leu Ala Val Arg Gly Glu Arg
 8130 8135 8140

gtg ctg gcc gca cgc ctg aca cga ctt gag tcg ccg gtt gat gta tcg 24654
 Val Leu Ala Ala Arg Leu Thr Arg Leu Glu Ser Pro Val Asp Val Ser
 8145 8150 8155

ggt cgg gag gtg ttg ccg tgg ttg tcg ggt ggg tcg gtg ttg gtg acg 24702
 Gly Arg Glu Val Leu Pro Trp Leu Ser Gly Gly Ser Val Leu Val Thr
 8160 8165 8170

ggt ggg acg ggt gtg ctg ggt gcg gcg gtg gcg cgg cat ctg gct ggt 24750
 Gly Gly Thr Gly Val Leu Gly Ala Ala Val Ala Arg His Leu Ala Gly
 8175 8180 8185 8190

gtg tgt ggg gtg cgg gat ctg ttg ttg gtg agc cgg cgt ggt ccg gat 24798
 Val Cys Gly Val Arg Asp Leu Leu Leu Val Ser Arg Arg Gly Pro Asp
 8195 8200 8205

gct ccg ggt gcg gag ggt ttg cgg gcg gag ctg gcc gcg ttg ggg gcg 24846
 Ala Pro Gly Ala Glu Gly Leu Arg Ala Glu Leu Ala Ala Leu Gly Ala
 8210 8215 8220

gag gtg cgg att gtt gcg tgt gat gtg ggg gag cgg cgg gag gtg gtc 24894
 Glu Val Arg Ile Val Ala Cys Asp Val Gly Glu Arg Arg Glu Val Val
 8225 8230 8235

cgg ctg ctg gag ggt gtt cct gcc ggg tgt ccg ctg acg ggt gtc gtg 24942
 Arg Leu Leu Glu Gly Val Pro Ala Gly Cys Pro Leu Thr Gly Val Val
 8240 8245 8250

cat gcg gct ggt gtg ctg gac gat gcg acg atc gcc tct ctc acg ccc 24990
 His Ala Ala Gly Val Leu Asp Asp Ala Thr Ile Ala Ser Leu Thr Pro
 8255 8260 8265 8270

gag cgg ctg ggc acg gtg ttc gcg gcc aag gtg gat gcc gct ctt ttg 25038
 Glu Arg Leu Gly Thr Val Phe Ala Ala Lys Val Asp Ala Ala Leu Leu
 8275 8280 8285

ctg gat gag ctg acg cgg ggt atg gag ctg tcg gcg ttc gtg ctg ttc 25086
 Leu Asp Glu Leu Thr Arg Gly Met Glu Leu Ser Ala Phe Val Leu Phe
 8290 8295 8300

tcc tcg gcc gcg ggg atc ctg ggg tcg gcc ggg cag ggc aac tac gcc 25134
 Ser Ser Ala Ala Gly Ile Leu Gly Ser Ala Gly Gln Gly Asn Tyr Ala
 8305 8310 8315

gcg gcc aat gcc gct ctg gac gcg ctg gcg tac cgg cgg cgg gcg gcg 25182
 Ala Ala Asn Ala Ala Leu Asp Ala Leu Ala Tyr Arg Arg Arg Ala Ala
 8320 8325 8330

ggt ctg ccg ggg gtg tcg ctg gcg tgg ggg ctg tgg gaa gag gcc agc 25230
 Gly Leu Pro Gly Val Ser Leu Ala Trp Gly Leu Trp Glu Glu Ala Ser
 8335 8340 8345 8350

ggg atg acc ggg cac ctg gcc ggc acc gac cac cgg cgc atc atc cgt 25278
 Gly Met Thr Gly His Leu Ala Gly Thr Asp His Arg Arg Ile Ile Arg
 8355 8360 8365

tcc ggt ctg cat ccc atg tcg acc ccg gac gca ctg gct ctc ttc gat 25326
 Ser Gly Leu His Pro Met Ser Thr Pro Asp Ala Leu Ala Leu Phe Asp
 8370 8375 8380

gcg gcc ctg gct ctg gac cgg ccg gtc ctg ctg ccc gcc gac ctg cgt 25374
 Ala Ala Leu Ala Leu Asp Arg Pro Val Leu Leu Pro Ala Asp Leu Arg

8385	8390	8395	
ccc gcc ccg ccc ctg ccg ccc ctg ctg cag gac ctc ctg ccc gcc acc			25422
Pro Ala Pro Pro Leu Pro Pro Leu Leu Gln Asp Leu Leu Pro Ala Thr			
8400	8405	8410	
cgc cgc cgc acc acc cgc acc acc act acc ggt ggt gcg gac aac ggc			25470
Arg Arg Arg Thr Thr Arg Thr Thr Thr Thr Gly Gly Ala Asp Asn Gly			
8415	8420	8425	8430
gcc cag ctg cat gcc cgg ctg gcc ggc cag aca cac gaa caa cag cac			25518
Ala Gln Leu His Ala Arg Leu Ala Gly Gln Thr His Glu Gln Gln His			
8435	8440	8445	
acc acc ctc ctc gcc ctg gtc cgc tcc cac atc gcc acc gtc ctc ggc			25566
Thr Thr Leu Leu Ala Leu Val Arg Ser His Ile Ala Thr Val Leu Gly			
8450	8455	8460	
cac aac gcg ccg gag atg atc ccc gtt gac tcg gcg ttc cgc gac cta			25614
His Asn Ala Pro Glu Met Ile Pro Val Asp Ser Ala Phe Arg Asp Leu			
8465	8470	8475	
ggc ttc gac tcc ttg aca gcg gtg gaa ctc cgt aac cgc ctg ggt gag			25662
Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Gly Glu			
8480	8485	8490	
gca acg gga ctg cga ctg ccg acc agt ctg gtc ttc gac cag ccg aat			25710
Ala Thr Gly Leu Arg Leu Pro Thr Ser Leu Val Phe Asp Gln Pro Asn			
8495	8500	8505	8510
gca gcg acc ctg gcg cgt cac cta cgt cgt gag ctg atg ggc gac gac			25758
Ala Ala Thr Leu Ala Arg His Leu Arg Arg Glu Leu Met Gly Asp Asp			
8515	8520	8525	
gcg gaa ggc gag acg cca tcg cag gtc gca ctt cat cag gtt gcc gcg			25806
Ala Glu Gly Glu Thr Pro Ser Gln Val Ala Leu His Gln Val Ala Ala			
8530	8535	8540	

gat gag ccg att gcg att gtg ggg atg gcg tgt cgt ttt ccg ggt ggg 25854
 Asp Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg Phe Pro Gly Gly
 8545 8550 8555

gtg tgt tcg ccg gag gag ttg tgg gag ctg gtt gcg tcg ggt ggg gat 25902
 Val Cys Ser Pro Glu Glu Leu Trp Glu Leu Val Ala Ser Gly Gly Asp
 8560 8565 8570

gcg att ggt gaa ttt ccg gcc ggt cgg ggg tgg gat ctg gag ggg ttg 25950
 Ala Ile Gly Glu Phe Pro Ala Gly Arg Gly Trp Asp Leu Glu Gly Leu
 8575 8580 8585 8590

ttt gat tcg gac cct gac cgg tcg ggg acg tcg tac gcg cgg tat ggc 25998
 Phe Asp Ser Asp Pro Asp Arg Ser Gly Thr Ser Tyr Ala Arg Tyr Gly
 8595 8600 8605

ggg ttt ttg tat gag gcg ggg gag ttc gat gcg gac ttc ttc ggg atc 26046
 Gly Phe Leu Tyr Glu Ala Gly Glu Phe Asp Ala Asp Phe Phe Gly Ile
 8610 8615 8620

agt ccg cgt gag gcg ttg gcg atg gat ccg cag cag cgg ttg ttg ctg 26094
 Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu
 8625 8630 8635

gag acg tcg tgg gag gcg ttc gag cgg gcg ggt atc gat ccg ctg tcg 26142
 Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Leu Ser
 8640 8645 8650

atg cgt ggc tcc cgt acg ggt gtc ttc gcc ggg gtg atg tac cac gac 26190
 Met Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Val Met Tyr His Asp
 8655 8660 8665 8670

tac gcc gcg cgt ctc cac cat gtc ccc gag ggt ttc gaa ggc ctc atc 26238
 Tyr Ala Ala Arg Leu His His Val Pro Glu Gly Phe Glu Gly Leu Ile
 8675 8680 8685

gcc aac ggc agc gca ggc agc gtc gcg acc ggc cgg gtg gcc tac agc 26286
 Ala Asn Gly Ser Ala Gly Ser Val Ala Thr Gly Arg Val Ala Tyr Ser

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8690

8695

8700

t t t g g c c t t g a g g g t c c g g c c g t g a c c g t c g a t a c g g c g t g t c g t c g 26334
P h e G l y L e u G l u G l y P r o A l a V a l T h r V a l A s p T h r A l a C y s S e r S e r
8705 8710 8715

t c g t t g g t g g c g t t g c a t t g g g c g g c g c a g g c g t t g c g t g c g g g t g a g 26382
S e r L e u V a l A l a L e u H i s T r p A l a A l a G l n A l a L e u A r g A l a G l y G l u
8720 8725 8730

t g t t c g a t g g c g c t t g c c g g g g g t g t g a c g g t g a t t c g t c t c c g g g t 26430
C y s S e r M e t A l a L e u A l a G l y G l y V a l T h r V a l M e t S e r S e r P r o G l y
8735 8740 8745 8750

a c g t t t g t g g a g t t c t c a c g t c a g c g g g g t c t g g c c g c g g a c g g g c g g 26478
T h r P h e V a l G l u P h e S e r A r g G l n A r g G l y L e u A l a A l a A s p G l y A r g
8755 8760 8765

t g c a a g g c c t a t t c g g c g g c t g c t g a c g g t a c c g g c t g g g c c g a g g g t 26526
C y s L y s A l a T y r S e r A l a A l a A l a A s p G l y T h r G l y T r p A l a G l u G l y
8770 8775 8780

g t g g g g a t g c t g c t g g t g a g c g g c t c t c c g a c g c c c g t c g c a a c g g t 26574
V a l G l y M e t L e u L e u V a l G l u A r g L e u S e r A s p A l a A r g A r g A s n G l y
8785 8790 8795

c a c c g t g t c c t g g c c g t g g t g c t g g c a g t g c g g t c a a c c a g g a c g g t 26622
H i s A r g V a l L e u A l a V a l V a l A r g G l y S e r A l a V a l A s n G l n A s p G l y
8800 8805 8810

g c g a g c a a c g g t c t g a c c g c g c c c a a c g g g c c c t c c c a g c a g c g t g t c 26670
A l a S e r A s n G l y L e u T h r A l a P r o A s n G l y P r o S e r G l n G l n A r g V a l
8815 8820 8825 8830

a t c c g t c a g g c c c t g g c c a a t g c g g g a c t g a c c c c g g c c g a t g t c g a c 26718
I l e A r g G l n A l a L e u A l a A s n A l a G l y L e u T h r P r o A l a A s p V a l A s p
8835 8840 8845

gca gtg gag ggc cac ggc acc ggg acc act ctg ggg gac ccg atc gag 26766
Ala Val Glu Gly His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu
8850 8855 8860

gcc cag gca ctc ctg gcc gcc tac gga caa cac cgc ccc cac cac cgc 26814
Ala Gln Ala Leu Leu Ala Ala Tyr Gly Gln His Arg Pro His His Arg
8865 8870 8875

ccc ttg tgg ctg gga tcc ctc aaa tcc aac atc ggg cac gca cag gcc 26862
Pro Leu Trp Leu Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala
8880 8885 8890

gcc gcg ggc gtg ggc gga gtc atc aag atg gtg atg gcc ctg cgc aac 26910
Ala Ala Gly Val Gly Gly Val Ile Lys Met Val Met Ala Leu Arg Asn
8895 8900 8905 8910

ggg ctg ctg cca cag acc ctc cac gtg gac gag ccc acc ccc cag gtc 26958
Gly Leu Leu Pro Gln Thr Leu His Val Asp Glu Pro Thr Pro Gln Val
8915 8920 8925

gac tgg tcc aca ggc gca gta caa ctc ctg aca caa ccg gtg ccc tgg 27006
Asp Trp Ser Thr Gly Ala Val Gln Leu Leu Thr Gln Pro Val Pro Trp
8930 8935 8940

ccc gcc gac ccg gcc ggc cgg cca cgc cac gcc ggc gtg tca tca ttc 27054
Pro Ala Asp Pro Ala Gly Arg Pro Arg His Ala Gly Val Ser Ser Phe
8945 8950 8955

ggc gtc agc ggc acc aac gcc cat gtg att ttg gag gag gcg cct gcg 27102
Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala Pro Ala
8960 8965 8970

gcg gcg ggc ggt gct gcc ggt ggt ggg gtg tcg gtg ggt gct ccg aat 27150
Ala Ala Gly Gly Ala Ala Gly Gly Gly Val Ser Val Gly Ala Pro Asn
8975 8980 8985 8990

cca gcc ctt ccg gtg gct gag tct gag ccg gtg ccg gtg ccg gtg ccg 27198
Pro Ala Leu Pro Val Ala Glu Ser Glu Pro Val Pro Val Pro Val Pro

8995

9000

9005

gtg tgc gcg agg tct gag gcc ggg ttg cgg gcg cag gca cag gcg ttg 27246
 Val Ser Ala Arg Ser Glu Ala Gly Leu Arg Ala Gln Ala Gln Ala Leu
 9010 9015 9020

cgc cag tac gtg gca gcc cgc ccg gac atg tca cct gcc gac atc ggt 27294
 Arg Gln Tyr Val Ala Ala Arg Pro Asp Met Ser Pro Ala Asp Ile Gly
 9025 9030 9035

gcg ggt ctg gcc cgc ggc cgg gcc gta ctg gaa cac cgc gcc gtc atc 27342
 Ala Gly Leu Ala Arg Gly Arg Ala Val Leu Glu His Arg Ala Val Ile
 9040 9045 9050

ctg gcc gcg gac cgc gag gaa ctg gcg cag gca ctg aca gcc ctg gca 27390
 Leu Ala Ala Asp Arg Glu Glu Leu Ala Gln Ala Leu Thr Ala Leu Ala
 9055 9060 9065 9070

gcc ggc gaa ccc cac ccc cac atc acc aca ggc cac acc cgg ggc agt 27438
 Ala Gly Glu Pro His Pro His Ile Thr Thr Gly His Thr Arg Gly Ser
 9075 9080 9085

gac cgc ggc ggc gtc gtc ttc gtc ttc ccc gga cag ggc ggc cag tgg 27486
 Asp Arg Gly Gly Val Val Phe Val Phe Pro Gly Gln Gly Gly Gln Trp
 9090 9095 9100

gcc ggg atg ggc ctg acc ctg ctc acc tcc tca ccc gtg ttc gcc gaa 27534
 Ala Gly Met Gly Leu Thr Leu Leu Thr Ser Ser Pro Val Phe Ala Glu
 9105 9110 9115

cac atc gac gca tgc gag aaa gcc ctc acc ccc tgg gtg ccc tgg tcc 27582
 His Ile Asp Ala Cys Glu Lys Ala Leu Thr Pro Trp Val Pro Trp Ser
 9120 9125 9130

ctg acc gac atc ctg cac cgc gac ccc gac gac ccc gca tgg caa caa 27630
 Leu Thr Asp Ile Leu His Arg Asp Pro Asp Asp Pro Ala Trp Gln Gln
 9135 9140 9145 9150

gcc gac gtg gtc cag ccc gtg ctc ttc agc atc atg gtc tcc ctc gcc 27678
Ala Asp Val Val Gln Pro Val Leu Phe Ser Ile Met Val Ser Leu Ala
9155 9160 9165

gcc ctg tgg cgc tcc tac ggc atc gaa ccc gac gcg gtc ctc ggc cac 27726
Ala Leu Trp Arg Ser Tyr Gly Ile Glu Pro Asp Ala Val Leu Gly His
9170 9175 9180

tcc cag gga gaa atc gcc gcc gcc cac atc tgc ggc gca ctc agc ctg 27774
Ser Gln Gly Glu Ile Ala Ala Ala His Ile Cys Gly Ala Leu Ser Leu
9185 9190 9195

aaa gac gcc gcc aaa acc gtt gca ctg cgc agc cag gca ctg gcc gcc 27822
Lys Asp Ala Ala Lys Thr Val Ala Leu Arg Ser Gln Ala Leu Ala Ala
9200 9205 9210

gta cga ggc cgg ggc gcc atg gtc tca ctg ccc ctg ccc gcc cag gac 27870
Val Arg Gly Arg Gly Ala Met Val Ser Leu Pro Leu Pro Ala Gln Asp
9215 9220 9225 9230

gtg cag cag ctc att tcc gaa cgg tgg gaa ggg cag ttg tgg gtg gca 27918
Val Gln Gln Leu Ile Ser Glu Arg Trp Glu Gly Gln Leu Trp Val Ala
9235 9240 9245

gcc ctc aac ggc ccc cac tcc acc acc gtc tcc ggc gac acc acc gca 27966
Ala Leu Asn Gly Pro His Ser Thr Thr Val Ser Gly Asp Thr Thr Ala
9250 9255 9260

gta gaa gaa ctc ctc acc cac tgt gcc gac acc ggc cta cgg gcc aaa 28014
Val Glu Glu Leu Leu Thr His Cys Ala Asp Thr Gly Leu Arg Ala Lys
9265 9270 9275

cgc atc ccc gtc gac tac gcc tcc cac tgc ccc cac gtc caa ccc ctc 28062
Arg Ile Pro Val Asp Tyr Ala Ser His Cys Pro His Val Gln Pro Leu
9280 9285 9290

cac gac gaa ctc ctg cac ctg ctg gga gac atc acc ccc cag ccg tcc 28110
His Asp Glu Leu Leu His Leu Leu Gly Asp Ile Thr Pro Gln Pro Ser

9295

9300

9305

9310

acc atg ccg ttc ttc tcc acc gtc gta ggg cac ctg gtc tgg tac acc 28158
 Thr Met Pro Phe Phe Ser Thr Val Val Gly His Leu Val Trp Tyr Thr

9315

9320

9325

aca acc ctg gac gcc gcc tac tgg tac cgc aac ctc cac cag ccc gtc 28206
 Thr Thr Leu Asp Ala Ala Tyr Trp Tyr Arg Asn Leu His Gln Pro Val

9330

9335

9340

cgc ttc agc cac gcc atc cag acc ctg acc gac gac gga cac cgc ccc 28254
 Arg Phe Ser His Ala Ile Gln Thr Leu Thr Asp Asp Gly His Arg Pro

9345

9350

9355

ttc atc gaa atc agt ccc cac ccc acc ctc gtc ccc gcc atc gaa gac 28302
 Phe Ile Glu Ile Ser Pro His Pro Thr Leu Val Pro Ala Ile Glu Asp

9360

9365

9370

acc acc gaa aac acc acc gaa aac atc acc gcg acc ggc agc ctc cgc 28350
 Thr Thr Glu Asn Thr Thr Glu Asn Ile Thr Ala Thr Gly Ser Leu Arg

9375

9380

9385

9390

cgc ggc gac aac gac acc cac cgc ttc ctc acc gcc ctc gcc cac acc 28398
 Arg Gly Asp Asn Asp Thr His Arg Phe Leu Thr Ala Leu Ala His Thr

9395

9400

9405

cac acc acc ggc att cgg aca ccc acc acc tgg cac cac cac tac acc 28446
 His Thr Thr Gly Ile Arg Thr Pro Thr Thr Trp His His His Tyr Thr

9410

9415

9420

caa acc cac ccc cac ccc cac aac cac cac ctc gac ctg ccc acc tac 28494
 Gln Thr His Pro His Pro His Asn His His Leu Asp Leu Pro Thr Tyr

9425

9430

9435

ccc ttc caa cac cag cac tac tgg ctc caa cca ccc acc acg aca acc 28542
 Pro Phe Gln His Gln His Tyr Trp Leu Gln Pro Pro Thr Thr Thr Thr

9440

9445

9450

gac ctc acc acc acc ggc ctc acc ccc acc cac cac ccc ctc ctc acc 28590
 Asp Leu Thr Thr Thr Gly Leu Thr Pro Thr His His Pro Leu Leu Thr
 9455 9460 9465 9470

gca aca ctc acc ctc gcc aac aac aac aca caa cta ctc acc ggc cgc 28638
 Ala Thr Leu Thr Leu Ala Asn Asn Asn Thr Gln Leu Leu Thr Gly Arg
 9475 9480 9485

ctc tcc cta cgc acc cac ccc tgg ctc acc gac cac acc gtc gtc ggt 28686
 Leu Ser Leu Arg Thr His Pro Trp Leu Thr Asp His Thr Val Val Gly
 9490 9495 9500

acc act ctt gtg cca gga acc gcc ctc ctc gaa ctc gcc ctc caa gca 28734
 Thr Thr Leu Val Pro Gly Thr Ala Leu Leu Glu Leu Ala Leu Gln Ala
 9505 9510 9515

acc acg acc gac cac ctc gaa gaa ctc gcc ctc cac acg cct ctc gtc 28782
 Thr Thr Thr Asp His Leu Glu Glu Leu Ala Leu His Thr Pro Leu Val
 9520 9525 9530

atc ccc cgt gag ggt gcc gtc gac gtt cag gtg cac atc aat cca ccg 28830
 Ile Pro Arg Glu Gly Ala Val Asp Val Gln Val His Ile Asn Pro Pro
 9535 9540 9545 9550

gac gac acc gac act cgt tca ctg acg atc tac tcg cga agc gag aac 28878
 Asp Asp Thr Asp Thr Arg Ser Leu Thr Ile Tyr Ser Arg Ser Glu Asn
 9555 9560 9565

gcc ccc gca gcg gct ccc tgg cgt cat cac gcc acg gcc gtt ctg gga 28926
 Ala Pro Ala Ala Ala Pro Trp Arg His His Ala Thr Ala Val Leu Gly
 9570 9575 9580

acc aag acc tcg cgc att gag aca ggc cgt agc cac gat gat ctg tcg 28974
 Thr Lys Thr Ser Arg Ile Glu Thr Gly Arg Ser His Asp Asp Leu Ser
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atg tgg ccg cca gcg ggc gca gtt cgc tgt gct gat gag gaa ttg gca 29022
 Met Trp Pro Pro Ala Gly Ala Val Arg Cys Ala Asp Glu Glu Leu Ala

9600

9605

9610

gcc ttg tat ggc gac tac gag gca aat ggc ttt gtc tat ggc ccc gca 29070
 Ala Leu Tyr Gly Asp Tyr Glu Ala Asn Gly Phe Val Tyr Gly Pro Ala
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ttc cgg ggg ctg act gct gcc tgg cgt ctg gga gac gag gtg ttt gcc 29118
 Phe Arg Gly Leu Thr Ala Ala Trp Arg Leu Gly Asp Glu Val Phe Ala
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 Glu Val Arg Leu Pro Glu Gln Val His Gly Glu Ala Ser Ala Tyr Asn
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ctg cac ccg gca ctg ctg gat gct gcc ttg cac gca gcg gcc ttt gcg 29214
 Leu His Pro Ala Leu Leu Asp Ala Ala Leu His Ala Ala Phe Ala
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ccg tcg ggc agt ctg ccg cag gga tcc gta ccg ttc tcc ttc acc ggt 29262
 Pro Ser Gly Ser Leu Pro Gln Gly Ser Val Pro Phe Ser Phe Thr Gly
 9680 9685 9690

gtg acg ctg cac gcc gcc aat gcg tcg tcg ttg cgc gtg cga ctc tcg 29310
 Val Thr Leu His Ala Ala Asn Ala Ser Ser Leu Arg Val Arg Leu Ser
 9695 9700 9705 9710

ccg gcc gat ccg aac agc ggc cac gcc gca gtt tcc gtg ctg gtc acg 29358
 Pro Ala Asp Pro Asn Ser Gly His Ala Ala Val Ser Val Leu Val Thr
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gat gac acc ggt acg ccc gtg gcg tcc gtc gag gcg ttg gcg gtg cgc 29406
 Asp Asp Thr Gly Thr Pro Val Ala Ser Val Glu Ala Leu Ala Val Arg
 9730 9735 9740

ccg ttg gcg gcg gac gaa ttg cga gct gcc gag cgc gcc gta cag cgc 29454
 Pro Leu Ala Ala Asp Glu Leu Arg Ala Ala Glu Arg Ala Val Gln Arg
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gct gag ctc ttc gac atg aag tgg gtt gag gtg ccc tca gat gta ctg 29502
Ala Glu Leu Phe Asp Met Lys Trp Val Glu Val Pro Ser Asp Val Leu
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gtg tcg ggc ggg gca tcg gtg gtg gtg ctg gat ggt gcc gac gac ctc 29550
Val Ser Gly Gly Ala Ser Val Val Val Leu Asp Gly Ala Asp Asp Leu
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gtt ggt ctg gcg gct gag gag gat ggt gtg ccg ggg gtg gtg gtg ttg 29598
Val Gly Leu Ala Ala Glu Glu Asp Gly Val Pro Gly Val Val Val Leu
9795 9800 9805

cgg tgc ccg gat gcc ggt gcc gat ggc ggc ggt ggt ggc ggt ggt gtg 29646
Arg Cys Pro Asp Ala Gly Ala Asp Gly Gly Gly Gly Gly Gly Gly Val
9810 9815 9820

ggt gag gtt gtt ggt ggg gtg ttg ggt gtg gtg cag ggg tgg ctg ggg 29694
Gly Glu Val Val Gly Gly Val Leu Gly Val Val Gln Gly Trp Leu Gly
9825 9830 9835

ctg gag cgg ttt gcg ggt tgc cgg ctg gtg gtg gtg acc cgg ggt gcg 29742
Leu Glu Arg Phe Ala Gly Ser Arg Leu Val Val Val Thr Arg Gly Ala
9840 9845 9850

gtg gtg gcc ggc ccg gag gac ggc ccg gtg gat ggc ccg gtg gat gtg 29790
Val Val Ala Gly Pro Glu Asp Gly Pro Val Asp Gly Pro Val Asp Val
9855 9860 9865 9870

gtg ggt gcg gcg gtg tgg ggg ctg gtg cgg tgc gcg cag gct gag cat 29838
Val Gly Ala Ala Val Trp Gly Leu Val Arg Ser Ala Gln Ala Glu His
9875 9880 9885

ccg gac cgg ttt gtc ctc ctc gac ctg gac acc gac ctc gac agc ggc 29886
Pro Asp Arg Phe Val Leu Leu Asp Leu Asp Thr Asp Leu Asp Ser Gly
9890 9895 9900

gct gac cgc gat gcc ggc aac gag gcc ggt atg ggg tct ggt ctg gat 29934
Ala Asp Arg Asp Ala Gly Asn Glu Ala Gly Met Gly Ser Gly Leu Asp

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9905	9910	9915	
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9920	9925	9930	
gtg cgt ggt gag cgg gtg ctg gcc gca cgc ctg aca cga ctt gag tcg Val Arg Gly Glu Arg Val Leu Ala Ala Arg Leu Thr Arg Leu Glu Ser			30030
9935	9940	9945	9950
ccg gtt gat gta tcg ggt cgg gag gtg ttg ccg tgg ttg tcg ggt ggg Pro Val Asp Val Ser Gly Arg Glu Val Leu Pro Trp Leu Ser Gly Gly			30078
9955	9960	9965	
tcg gtg ttg gtg acg ggt ggg acg ggt gtg ctg ggt gcg gcg gtg gcg Ser Val Leu Val Thr Gly Gly Thr Gly Val Leu Gly Ala Ala Val Ala			30126
9970	9975	9980	
cgg cat ctg gct ggt gtg tgt ggg gtg cgg gat ctg ttg ttg gtg agc Arg His Leu Ala Gly Val Cys Gly Val Arg Asp Leu Leu Leu Val Ser			30174
9985	9990	9995	
cgg cgt ggt ccg gat gct ccg ggt gcg gag ggt ttg ccg gcg gag ctg Arg Arg Gly Pro Asp Ala Pro Gly Ala Glu Gly Leu Arg Ala Glu Leu			30222
10000	10005	10010	
gcc gcg ttg ggg gcg gag gtg cgg att gtt gcg tgt gat gtg ggg gag Ala Ala Leu Gly Ala Glu Val Arg Ile Val Ala Cys Asp Val Gly Glu			30270
10015	10020	10025	10030
cgg cgg gag gtg gtc cgg ctg ctg gag ggt gtt cct gcc ggg tgt ccg Arg Arg Glu Val Val Arg Leu Leu Glu Gly Val Pro Ala Gly Cys Pro			30318
10035	10040	10045	
ctg acg ggt gtc gtg cat gcg gct ggt gtg ctg gac gat gcg acg atc Leu Thr Gly Val Val His Ala Ala Gly Val Leu Asp Asp Ala Thr Ile			30366
10050	10055	10060	

gcc tct ctc acg ccc gag cgg ctg ggc acg gtg ttc gcg gcc aag gtg 30414
Ala Ser Leu Thr Pro Glu Arg Leu Gly Thr Val Phe Ala Ala Lys Val
10065 10070 10075

gat gcc gct ctt ttg ctg gat gag ctg acg cgg ggt atg gag ctg tcg 30462
Asp Ala Ala Leu Leu Leu Asp Glu Leu Thr Arg Gly Met Glu Leu Ser
10080 10085 10090

gcg ttc gtg ctg ttc tcc tcg gcc gcg ggg atc ctg ggg tcg gcc ggg 30510
Ala Phe Val Leu Phe Ser Ser Ala Ala Gly Ile Leu Gly Ser Ala Gly
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Gln Gly Asn Tyr Ala Ala Ala Asn Ala Ala Leu Asp Ala Leu Ala Tyr
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tgg gaa gag gcc agc ggg atg acc ggg cat ctg gcc gcg acc gac cac 30654
Trp Glu Glu Ala Ser Gly Met Thr Gly His Leu Ala Gly Thr Asp His
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cgg cgc atc atc cgt tcc ggt ctg cat ccc atg tcg acc ccg gac gca 30702
Arg Arg Ile Ile Arg Ser Gly Leu His Pro Met Ser Thr Pro Asp Ala
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Leu Ala Leu Phe Asp Ala Ala Leu Ala Leu Asp Arg Pro Val Leu Leu
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Pro Ala Asp Leu Arg Pro Ala Pro Pro Leu Pro Pro Leu Leu Gln Asp
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Asn Arg Leu Ser His Thr Thr Gly Leu Arg Leu Pro Thr Thr Leu Ala
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ttc gac cac ccc aac ccc acc acc ctc acc cac cac ctc cac aca caa 31134
Phe Asp His Pro Asn Pro Thr Thr Leu Thr His His Leu His Thr Gln
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Leu Val Ser Lys Gly Leu Thr Ala Ala Ala Glu Pro Asp Ala Ala Thr
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 <213> Streptomyces avermitilis

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 35 40 45

Ala Ser Asp Val Phe Arg Glu Ser Val Arg Ala Cys Glu Ala Ala Phe
 50 55 60

Ala Pro Tyr Val Asp Trp Ser Val Glu Gln Val Leu Arg Asp Ser Pro
 65 70 75 80

Asp Ala Pro Gly Leu Asp Arg Val Asp Val Val Gln Pro Thr Leu Phe
 85 90 95

Ala Val Met Ile Ser Leu Ala Ala Leu Trp Arg Ser Gln Gly Val Glu

100

105

110

Pro Cys Ala Val Leu Gly His Ser Leu Gly Glu Ile Ala Ala Ala His
 115 120 125

Val Ser Gly Gly Leu Ser Leu Ala Asp Ala Ala Arg Val Val Thr Leu
 130 135 140

Trp Ser Gln Ala Gln Thr Thr Leu Ala Gly Thr Gly Ala Leu Val Ser
 145 150 155 160

Val Ala Ala Thr Pro Asp Glu Leu Leu Pro Arg Ile Ala Pro Trp Thr
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Glu Asp Asn Pro Ala Arg Leu Ala Val Ala Ala Val Asn Gly Pro Arg
 180 185 190

Ser Thr Val Val Ser Gly Ala Arg Glu Ala Val Ala Asp Leu Val Ala
 195 200 205

Asp Leu Thr Ala Ala Gln Val Arg Thr Arg Met Ile Pro Val Asp Val
 210 215 220

Pro Ala His Ser Pro Leu Met Tyr Ala Ile Glu Glu Arg Val Val Ser
 225 230 235 240

Gly Leu Leu Pro Ile Thr Pro Arg Pro Ser Arg Ile Pro Phe His Ser
 245 250 255

Ser Val Thr Gly Gly Arg Leu Asp Thr Arg Glu Leu Asp Ala Ala Tyr
 260 265 270

Trp Tyr Arg Asn Met Ser Ser Thr Val Arg Phe Glu Pro Ala Ala Arg
 275 280 285

Leu Leu Leu Gln Gln Gly Pro Lys Thr Phe Val Glu Met Ser Pro His
 290 295 300

Pro Val Leu Thr Met Gly Leu Gln Glu Leu Ala Pro Asp Leu Gly Asp
305 310 315 320

Thr Thr Gly Thr Ala Asp Thr Val Ile Met Gly Thr Leu Arg Arg Gly
325 330 335

Gln Gly Thr Leu Asp His Phe Leu Thr Ser Leu Ala Gln Leu Arg Gly
340 345 350

His Gly Glu Thr Ser Ala Thr Thr Val Leu Ser Ala Arg Leu Thr Ala
355 360 365

Leu Ser Pro Thr Gln Gln Gln Ser Leu Leu Leu Asp Leu Val Arg Ala
370 375 380

His Thr Met Ala Val Leu Asn Asp Asp Gly Asn Glu Arg Thr Ala Ser
385 390 395 400

Asp Ala Gly Pro Ser Ala Ser Phe Ala His Leu Gly Phe Asp Ser Val
405 410 415

Met Gly Val Glu Leu Arg Asn Arg Leu Ser Lys Ala Thr Gly Leu Arg
420 425 430

Leu Pro Val Thr Leu Ile Phe Asp His Thr Thr Pro Ala Ala Val Ala
435 440 445

Ala Arg Leu Arg Thr Ala Ala Leu Gly His Leu Asp Glu Asp Thr Ala
450 455 460

Pro Val Pro Asp Ser Pro Ser Gly His Gly Gly Thr Ala Ala Ala Asp
465 470 475 480

Asp Pro Ile Ala Ile Ile Gly Met Ala Cys Arg Phe Pro Gly Gly Val
485 490 495

Arg Ser Pro Lys Asp Leu Trp Glu Leu Ala Ala Ser Gly Gly Asp Ala
500 505 510

Ile Gly Pro Phe Pro Thr Asp Arg Gly Trp Pro Thr Glu Gln Arg His
515 520 525

Ala Gln Asp Pro Thr Gln Pro Gly Thr Phe Tyr Pro Gln Gly Gly Gly
530 535 540

Phe Leu His Asp Ala Ala His Phe Asp Ala Gly Phe Phe Gly Ile Ser
545 550 555 560

Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu
565 570 575

Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Leu Ser Val
580 585 590

Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Ala Leu Ser Phe Asp Tyr
595 600 605

Gly Pro Arg Met Asp Thr Ala Ser Ser Glu Gly Ala Ala Asp Val Glu
610 615 620

Gly His Ile Leu Thr Gly Thr Thr Gly Ser Val Leu Ser Gly Arg Ile
625 630 635 640

Ala Tyr Ser Phe Gly Leu Glu Gly Pro Ala Ile Thr Val Asp Thr Gly
645 650 655

Cys Ser Ala Ser Leu Val Thr Leu His Leu Ala Cys Gln Ser Leu Arg
660 665 670

Ser Gly Glu Cys Thr Leu Ala Leu Ala Gly Gly Val Ser Val Met Ser
675 680 685

Thr Leu Gly Met Phe Ile Glu Phe Ser Arg Gln Arg Gly Leu Ser Val
690 695 700

Asp Gly Arg Cys Lys Ala Tyr Ser Ala Ala Ala Asp Gly Thr Gly Trp

705

710

715

720

Gly Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Val
725 730 735

Arg Leu Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn
740 745 750

Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ala Gln
755 760 765

Glu Arg Val Ile Arg Gln Ala Leu Ala Asn Ala Gly Leu Ser Val Ala
770 775 780

Asp Val Asp Val Val Glu Gly His Gly Thr Gly Thr Thr Leu Gly Asp
785 790 795 800

Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Arg Ala Gly
805 810 815

Asp Arg Pro Leu Trp Leu Gly Ser Leu Lys Ser Asn Ile Gly His Thr
820 825 830

Met Ala Ala Ala Gly Val Gly Gly Val Ile Lys Met Val Met Ala Leu
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Arg Glu Gly Val Leu Pro Arg Thr Leu His Val Asp Lys Pro Ser Pro
850 855 860

Gln Val Asp Trp Ser Ala Gly Ala Val Arg Leu Leu Thr Glu Ala Val
865 870 875 880

Pro Trp Pro Gly Asp Ala Ala Gly Arg Leu Arg Arg Ala Gly Val Ser
885 890 895

Ser Phe Gly Ile Gly Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala
900 905 910

Pro Ala Ala Gly Gly Cys Val Ala Gly Gly Gly Val Leu Glu Gly Ala
915 920 925

Pro Gly Leu Ala Ile Ser Val Ala Glu Ser Val Ala Ala Pro Val Ala
930 935 940

Val Ser Ala Pro Val Ala Glu Ser Val Pro Val Pro Val Pro Val Pro
945 950 955 960

Val Pro Val Pro Val Ser Ala Arg Ser Glu Ala Gly Leu Arg Ala Gln
965 970 975

Ala Glu Ala Leu Arg Gln Tyr Val Ala Val Arg Pro Asp Val Ser Leu
980 985 990

Ala Asp Val Gly Ala Gly Leu Ala Cys Gly Arg Ala Val Leu Glu His
995 1000 1005

Arg Ala Val Val Leu Ala Ala Asp Arg Glu Glu Leu Val Gln Gly Leu
1010 1015 1020

Gly Ala Leu Ala Ala Gly Glu Pro Asp Arg Arg Val Thr Thr Gly His
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Ala Pro Gly Gly Asp Arg Gly Gly Val Val Phe Val Phe Pro Gly Gln
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Gly Gly Gln Trp Ala Gly Met Gly Val Arg Leu Leu Ala Ser Ser Pro
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Val Phe Ala Arg Arg Met Gln Ala Cys Glu Glu Ala Leu Ala Pro Trp
1075 1080 1085

Val Asp Trp Ser Val Val Asp Ile Leu Arg Arg Asp Ala Gly Asp Ala
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Val Trp Glu Arg Ala Asp Val Val Gln Pro Val Leu Phe Ser Val Met
1105 1110 1115 1120

Val Ser Leu Ala Ala Leu Trp Arg Ser Tyr Gly Ile Glu Pro Asp Ala
1125 1130 1135

Val Leu Gly His Ser Gln Gly Glu Ile Ala Ala Ala His Val Cys Gly
1140 1145 1150

Ala Leu Ser Leu Lys Asp Ala Ala Lys Thr Val Ala Leu Arg Ser Arg
1155 1160 1165

Ala Leu Ala Ala Val Arg Gly Arg Gly Gly Met Ala Ser Val Pro Leu
1170 1175 1180

Pro Ala Gln Glu Val Glu Gln Leu Ile Gly Glu Arg Trp Ala Gly Arg
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Leu Trp Val Ala Ala Val Asn Gly Pro Arg Ser Thr Ala Val Ser Gly
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Asp Ala Glu Ala Val Asp Glu Val Leu Ala Tyr Cys Ala Gly Thr Gly
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Val Arg Ala Arg Arg Ile Pro Val Asp Tyr Ala Ser His Cys Pro His
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Val Gln Pro Leu Arg Glu Glu Leu Leu Glu Leu Leu Gly Asp Ile Ser
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Pro Gln Pro Ser Gly Val Pro Phe Phe Ser Thr Val Glu Gly Thr Trp
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Leu Asp Thr Thr Thr Leu Asp Ala Ala Tyr Trp Tyr Arg Asn Leu His
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Gln Pro Val Arg Phe Ser Asp Ala Val Gln Ala Leu Ala Asp Asp Gly
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His Arg Val Phe Val Glu Val Ser Pro His Pro Thr Leu Val Pro Ala

1315

1320

1325

Ile Glu Asp Thr Thr Glu Asp Thr Ala Glu Asp Val Thr Ala Ile Gly
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Ser Leu Arg Arg Gly Asp Asn Asp Thr Arg Arg Phe Leu Thr Ala Leu
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Ala His Thr His Thr Thr Gly Ile Gly Thr Pro Thr Thr Trp His His
 1365 1370 1375

His Tyr Thr His His His Thr His Pro His Pro His Thr His Leu Asp
 1380 1385 1390

Leu Pro Thr Tyr Pro Phe Gln His Gln His Tyr Trp Leu Glu Ser Ser
 1395 1400 1405

Gln Pro Gly Ala Gly Ser Gly Ser Gly Ala Gly Ala Gly Ser Gly Ala
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Gly Ser Gly Arg Ala Gly Thr Ala Gly Gly Thr Ala Glu Val Glu Ser
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Arg Phe Trp Asp Ala Val Ala Arg Gln Asp Leu Glu Thr Val Ala Thr
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Thr Leu Ala Val Pro Pro Ser Ala Gly Leu Asp Thr Val Val Pro Ala
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Leu Ser Ala Trp His Arg His Gln His Asp Gln Ala Arg Ile Asn Thr
 1475 1480 1485

Trp Thr Tyr Gln Glu Thr Trp Lys Pro Leu Thr Leu Pro Thr Thr His
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Gln Pro His Gln Thr Trp Leu Ile Ala Ile Pro Glu Thr Gln Thr His
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His Pro His Ile Thr Asn Ile Leu Thr Asn Leu His His His Gly Ile
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1540 1545 1550

Leu His His Thr Leu His His Thr Arg Gln Gln Ala Gln Asn His Thr
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Thr Gly Ala Ile Thr Gly Leu Leu Ser Leu Leu Ala Leu Asp Glu Thr
1570 1575 1580

Pro His Pro His His Pro His Thr Pro Thr Gly Thr Leu Leu Asn Leu
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Thr Leu Thr Gln Thr His Thr Gln Thr His Pro Pro Thr Pro Leu Trp
1605 1610 1615

Tyr Ala Thr Thr Asn Ala Thr Thr Thr His Pro Asn Asp Pro Leu Thr
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His Pro Thr Gln Ala Gln Thr Trp Gly Leu Ala Arg Thr Thr Leu Leu
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Glu His Pro Thr His Thr Ala Gly Ile Ile Asp Leu Pro Thr Thr Pro
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Thr Pro His Thr Leu Gln His Leu Thr Gln Thr Leu Thr Gln Pro His
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His Gln Thr Gln Leu Ala Ile Arg Thr Thr Gly Thr His Thr Arg Arg
1685 1690 1695

Leu Thr Pro Thr Thr Leu Thr Pro Thr His Gln Pro Pro Thr Pro Thr
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Pro His Gly Thr Thr Leu Ile Thr Gly Gly Thr Gly Ala Leu Ala Thr
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Thr Gln Leu Gln Gln Lys Gly Ile His Leu Thr Ile Thr Thr Cys Asp
1765 1770 1775

Thr Ser Asn Pro Asp Gln Leu Gln Gln Leu Leu Asn Thr Ile Pro Pro
1780 1785 1790

Gln His Pro Leu Thr Thr Val Ile His Thr Ala Gly Ile Leu Asp Asp
1795 1800 1805

Ala Thr Leu Thr Asn Leu Thr Pro Thr Gln Leu Asn Asn Val Leu Arg
1810 1815 1820

Ala Lys Ala His Ser Ala His Leu Leu His Gln Leu Thr Gln His Thr
1825 1830 1835 1840

Pro Leu Thr Ala Phe Val Leu Tyr Ser Ser Ala Ala Ala Thr Phe Gly
1845 1850 1855

Ala Pro Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Tyr Leu Asp Ala
1860 1865 1870

Leu Ala His His Arg His Thr His His Leu Pro Ala Thr Ser Ile Ala
1875 1880 1885

Trp Gly Thr Trp Gln Gly Asn Gly Leu Ala Asp Ser Asp Lys Ala Arg
1890 1895 1900

Ala Tyr Leu Asp Arg Arg Gly Phe Arg Pro Met Ser Pro Glu Leu Ala
1905 1910 1915 1920

Thr Ala Ala Val Thr Gln Ala Ile Ala Asp Thr Glu Arg Pro Tyr Val

1925

1930

1935

Val Ile Ala Asp Ile Asp Trp Ser Lys Ile Glu His Thr Ser Gln Thr
 1940 1945 1950

Ser Asp Leu Val Ser Ala Ala Arg Glu Arg Glu Pro Ala Val Gln Arg
 1955 1960 1965

Pro Thr Pro Pro Ala Glu Leu His Lys Thr Leu Ala His Gln Thr Ser
 1970 1975 1980

Ala Asp Gln Arg Ala Ala Leu Leu Glu Leu Val Arg Asp His Val Ala
 1985 1990 1995 2000

Ala Val Leu Arg His Ala Asp Pro Lys Ala Ile Ala Pro Asp Gln Ser
 2005 2010 2015

Phe Arg Ala Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Phe Arg Asn
 2020 2025 2030

Leu Leu Ile Lys Ala Thr Gly Leu Arg Leu Pro Val Ser Leu Val Phe
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Asp His Pro Thr Pro Ala Lys Leu Ala Val His Leu Gln Asn Gln Leu
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Ser Glu Gln Asp Ala Ile Gly Gly Phe Pro Thr Asp Arg Gly Trp Asp
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Leu Asp Thr Leu Tyr Asp Pro Asp Pro Asp His Pro Gly Thr Cys Tyr
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Thr Arg Asn Gly Gly Phe Leu Tyr Asp Ala Gly His Phe Asp Ala Glu
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Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
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Arg Ala Gly Glu Cys Ser Met Ala Leu Ala Gly Gly Val Thr Val Met
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Ser Ser Pro Gly Ala Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala
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His Arg Asn Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val
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2420 2425 2430

His Thr Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Met
2435 2440 2445

Ala Leu Arg His Gly Leu Leu Pro Arg Thr Leu His Val Asp Glu Pro
2450 2455 2460

Ser Pro His Val Asp Trp Ser Ala Gly Ala Val Gln Leu Leu Thr Glu
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Thr Val Pro Trp Pro Gly Gly Glu Gly Arg Leu Arg Arg Ala Gly Val
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Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu
2500 2505 2510

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2530

2535

2540

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Val Gly Tyr Thr Leu Ala His Ala Arg Ala Val Phe Asp His Arg Ala
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Asp Pro His Leu Asp His Pro Leu Leu Pro Leu Leu Thr Gln Asn Asp
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Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu Thr
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Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu Gly
 2725 2730 2735

Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp Ala
 2740 2745 2750

Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro Pro
 2755 2760 2765

Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile Thr His His
 2770 2775 2780

Leu Thr Ala His Glu Asn Asp Leu Ala Ile Ala Ala Ile Asn Thr Pro
 2785 2790 2795 2800

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His Ala Phe His Ser Pro His Thr Asn Pro Ile Leu Asn Gln Leu His
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Pro Phe Gln His His His Tyr Trp Leu Glu Ser Thr Gln Pro Gly Ala
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Gly Ala Thr Leu Glu Leu Ala Thr Asp Gly Gly Ala Leu Leu Ala Gly
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Arg Leu Ser Leu Arg Ser His Pro Trp Leu Ala Asp His Ala Val Gly
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Ala Gly Thr Tyr Val Gly Cys Asp Arg Val Asp Glu Leu Thr Leu His
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Ala Pro Leu Val Val Pro Val Asp Gly Gly Val Ser Val Gln Val Gly
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Val Ala Ala Ala Asp Gly Glu Gly Arg Arg Leu Val Ser Val Tyr Ala
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Arg Gly Gly Ser Ala Cys Gly Gly Gly Gly Ala Ser Gly Gly Val Trp
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Thr Cys His Ala Ser Gly Val Leu Val Glu Ala Ala Ala Gly Gly Val
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Met Gly Gln Leu Arg Ala Val Ser Val Ser Ala Gly Arg Arg Gly Ser
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Val Pro Gly Val Val Val Leu Arg Cys Pro Asp Ala Gly Ala Gly Gly

3345

3350

3355

3360

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Ser Arg Arg Gly Pro Asp Ala Pro Gly Ala Glu Gly Leu Arg Ala Glu
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Leu Ala Ala Leu Gly Ala Glu Val Arg Ile Val Ala Cys Asp Val Gly
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Glu Arg Arg Glu Val Val Arg Leu Leu Glu Gly Val Pro Ala Gly Cys
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Pro Leu Thr Gly Val Val His Ala Ala Gly Val Leu Asp Asp Ala Thr
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Ile Ala Ser Leu Thr Pro Glu Arg Leu Gly Thr Val Phe Ala Ala Lys
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Val Asp Ala Ala Leu Leu Leu Asp Glu Leu Thr Arg Gly Met Glu Leu
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Ser Ala Phe Val Leu Phe Ser Ser Ala Ala Gly Ile Leu Gly Ser Ala
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Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Ala Leu Asp Ala Leu Ala
 3685 3690 3695

Tyr Arg Arg Arg Ala Ala Gly Leu Pro Gly Val Ser Leu Ala Trp Gly
 3700 3705 3710

Leu Trp Glu Glu Ala Ser Gly Met Thr Gly His Leu Ala Gly Thr Asp
 3715 3720 3725

His Arg Arg Ile Ile Arg Ser Gly Leu His Pro Met Ser Thr Pro Asp
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Asp Leu Leu Pro Ala Thr Arg Arg Arg Thr Thr Arg Thr Thr Thr Thr
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Gly Gly Ala Asp Asn Gly Ala Gln Leu His Ala Arg Leu Ala Gly Gln
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Thr His Glu Gln Gln His Thr Thr Leu Leu Ala Leu Val Arg Ser His
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Ile Ala Thr Val Leu Gly His Thr Thr Pro Asp Thr Ile Pro Pro Asp
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Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu
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Arg Asn Arg Leu Ser Arg Thr Thr Gly Leu Arg Leu Pro Thr Thr Leu
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Ala Phe Asp His Pro Asn Pro Thr Thr Leu Thr His His Leu His Thr
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Gln Leu Gln Pro Gln Pro Asp Asn Ala Val Ala Pro Val Leu Ala Glu
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Leu Asp Lys Leu Glu Ser Ala Leu Ser Ala Leu Asp Lys Thr Asp Ser
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Ala Ser Glu Arg Val Thr Leu Arg Leu Lys Ser Leu Met Leu Arg Trp
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Asn Ala Pro Gln His Pro Thr Ala Glu Ser Ala Asp Asp Asp Glu Lys
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<211> 6239

<212> PRT

<213> Streptomyces avermitilis

<400> 4

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20 25 30Arg Glu Gln Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg Tyr Pro
35 40 45Gly Gly Ala Thr Ser Pro Thr Arg Leu Trp His Leu Val Lys Ser Gln
50 55 60Thr Asp Ala Ile Gly Glu Phe Pro Thr Asp Arg Gly Trp Asn Leu Glu
65 70 75 80Gln Leu Tyr Asp Pro Asp Pro Asp Arg Ser Gly Thr Ser Tyr Thr Arg
85 90 95Ser Gly Gly Phe Leu Tyr Asp Ala Gly Asp Phe Asp Ala Ala Phe Phe
100 105 110Glu Leu Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu
115 120 125Leu Leu Glu Thr Thr Trp Glu Thr Phe Glu Gln Gly Gly Ile Asp Pro
130 135 140

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Arg Ser Met Arg Gly Ser Arg Thr Gly Val Phe Val Gly Ile Asn Pro
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Glu Asp Tyr Thr Thr Gly Tyr Thr His Gln Pro Ser Asn Ala Val Glu
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Gly Tyr Leu Leu Thr Gly Ser Ala Ala Ser Ile Ala Ser Gly Arg Ile
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Ser Tyr Asn Phe Gly Leu Glu Gly Pro Ala Ile Thr Ile Asp Thr Ala
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Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Gln Ala Leu Arg
210 215 220

Ser Gly Glu Cys Thr Met Ala Leu Ala Gly Gly Ala Ser Val Met Ala
225 230 235 240

Thr Pro Phe Val Phe Thr Glu Phe Ser Arg Gln Arg Gly Leu Ala Ala
245 250 255

Asp Gly Arg Cys Lys Ala Phe Ser Ala Ala Ala Asp Gly Thr Gly Trp
260 265 270

Ser Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Arg
275 280 285

Arg Asn Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn
290 295 300

Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Arg Ser Gln
305 310 315 320

Val Lys Val Ile Arg Gln Ala Leu Ala Asn Ala His Leu Ser Pro Ala
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Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp

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345

350

Pro Ile Glu Ala Gln Ala Leu Val Glu Ala Tyr Gly Gln Asp Arg Pro
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Asn Gly Arg Pro Leu Trp Leu Gly Thr Leu Lys Ser Asn Ile Gly His
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Ser Met Ala Ala Ala Gly Val Gly Gly Val Ile Lys Met Val Met Ala
 385 390 395 400

Leu Arg Asn Gly Leu Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser
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Pro His Val Asp Trp Ser Ala Gly Ala Val Gln Leu Leu Thr Glu Thr
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Val Pro Trp Pro Gly Gly Glu Gly Arg Leu Arg Arg Ala Gly Val Ser
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Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala
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Pro Ala His Asn Ile Pro Ser Asp Thr Pro Ala Asp Asp Val Pro Gly
 465 470 475 480

Glu Ser Ala Ala Asp Glu Asp Ala Gly Ser Gly Asp Glu Ala Ala Ala
 485 490 495

Gly Ser Pro Gly Val Trp Pro Trp Leu Val Ser Ala Lys Ser Gln Pro
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Ala Leu Arg Ala Gln Ala Gln Ala Leu His Ala His Leu Thr Asp His
 515 520 525

Pro Gly Leu Asp Leu Ala Asp Val Gly Tyr Thr Leu Ala His Ala Arg
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Ala Val Phe Asp His Arg Ala Thr Leu Ile Ala Ala Asp Arg Asp Thr
545 550 555 560

Phe Leu Gln Ala Leu Gln Ala Leu Ala Ala Gly Glu Pro His Pro Ala
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Val Ile His Ser Ser Ala Pro Gly Gly Thr Gly Thr Gly Glu Ala Ala
580 585 590

Gly Lys Thr Ala Phe Ile Cys Ser Gly Gln Gly Thr Gln Arg Pro Gly
595 600 605

Met Ala His Gly Leu Tyr His Thr His Pro Val Phe Ala Ala Ala Leu
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Asn Asp Ile Cys Thr His Leu Asp Pro His Leu Asp His Pro Leu Leu
625 630 635 640

Pro Leu Leu Thr Gln Asp Pro Asn Thr Gln Asp Thr Thr Thr Leu Glu
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Glu Ala Ala Ala Leu Leu Gln Gln Thr Arg Tyr Ala Gln Pro Ala Leu
660 665 670

Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu Thr Asp Gly Tyr His
675 680 685

Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu Gly Glu Ile Thr Ala
690 695 700

Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp Ala Thr Thr Leu Ile
705 710 715 720

Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro Pro Gly Thr Met Thr
725 730 735

Thr Leu His Thr Thr Pro His His Ile Thr His His Leu Thr Ala His
740 745 750

Glu Asn Asp Leu Ala Ile Ala Ala Ile Asn Thr Pro Thr Ser Leu Val
755 760 765

Ile Ser Gly Thr Pro His Thr Val Gln His Ile Thr Thr Leu Cys Gln
770 775 780

Gln Gln Gly Ile Lys Thr Lys Thr Leu Pro Thr Asn His Ala Phe His
785 790 795 800

Ser Pro His Thr Asn Pro Ile Leu Asn Gln Leu His Gln His Thr Gln
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Thr Leu Thr Tyr His Pro Pro His Thr Pro Leu Ile Thr Ala Asn Thr
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Pro Pro Asp Gln Leu Leu Thr Pro His Tyr Trp Thr Gln Gln Ala Arg
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Asn Thr Val Asp Tyr Ala Thr Thr Thr Gln Thr Leu His Gln His Gly
850 855 860

Val Thr Thr Tyr Ile Glu Leu Gly Pro Asp Asn Thr Leu Thr Thr Leu
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His Pro His His His Pro Gln Thr His Leu Leu Thr Asn Leu Ala Lys
900 905 910

Thr Thr Thr Thr Trp His Pro His His Tyr Thr His His His Asn Gln
915 920 925

Pro His Thr His Thr His Leu Asp Leu Pro Thr Tyr Pro Phe Gln His
930 935 940

His His Tyr Trp Leu Gln Pro Pro Gly Lys Pro Ser Asp Pro Ser Pro

945

950

955

960

Ser Glu Gly Arg Glu Gln Ala Thr Thr Pro Ser Thr Pro Leu Arg Asp
 965 970 975

Val Leu Val Gly Lys Ser Pro Gln Glu Arg Asp Glu Glu Leu Leu Arg
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Leu Val Arg Thr His Ala Ala Ala Val Leu Gly His Ala Thr Pro Glu
 995 1000 1005

Val Ile Val Pro Asn Lys Ala Phe Lys Glu Leu Gly Phe Asp Ser Leu
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Trp Gln Val Val Ser Gly Gly His Asp Ala Ile Gly Gly Phe Pro Thr
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His Gly Thr Ser Tyr Thr Arg Ser Gly Gly Phe Leu Tyr Asp Ala Gly
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Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ala Trp Glu Ser Ile
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Glu His Ala Cys Ile Asn Pro Asp Ser Leu Arg Gly Thr Pro Thr Gly
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Val Phe Ala Gly Leu Thr Tyr His Asp Tyr Ala Ala Arg Phe Pro Thr
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Ala Pro Ala Gly Phe Glu Gly Tyr Leu Gly His Gly Ser Ala Gly Ser
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Ile Ala Ser Gly Arg Val Ala Tyr Ala Leu Gly Leu Glu Gly Pro Ala
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Gln Arg Gly Leu Ala Val Asp Gly Arg Cys Lys Ala Phe Ser Ala Ala
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Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala
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Tyr Gly Gln Asp Arg Pro Gly Asn Glu Pro Leu Trp Leu Gly Ser Met
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Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ala Gly Val Gly Gly Val
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Ile Lys Met Val Met Ala Leu Arg Asn Gly Leu Leu Pro Arg Thr Leu
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His Val Asp Glu Pro Ser Pro His Val Asp Trp Ser Ala Gly Ala Val
1460 1465 1470

Gln Leu Leu Thr Glu Thr Val Pro Trp Pro Gly Gly Glu Gly Arg Leu
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Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His
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Val Ile Leu Glu Glu Ala Pro Ala His Asn Ile Pro Ser Asp Thr Pro
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Ala Asp Asp Ala Pro Gly Glu Ala Ala Ala Asp Asp Val Pro Gly Glu
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Ala Gly Ser Pro Gly Val Trp Pro Trp Leu Val Ser Ala Lys Ser Gln

1555

1560

1565

Pro Ala Leu Arg Ala Gln Ala Gln Ala Leu His Ala His Leu Thr Asp
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His Pro Gly Leu Asp Leu Ala Asp Val Gly Tyr Thr Leu Ala His Ala
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Arg Ala Val Phe Asp His Arg Ala Thr Leu Ile Ala Ala Asp Arg Asp
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Thr Phe Leu Gln Ala Leu Gln Ala Leu Ala Ala Gly Glu Pro His Pro
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Ala Val Ile His Ser Ser Ala Pro Gly Gly Thr Gly Thr Gly Glu Ala
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Leu Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu Thr Asp Gly Tyr
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His Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu Gly Glu Ile Thr
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Ala Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp Ala Thr Thr Leu
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Ile Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro Pro Gly Thr Met
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Thr Thr Leu His Thr Thr Pro His His Ile Thr His His Leu Thr Ala
 1795 1800 1805

His Glu Asn Asp Leu Ala Ile Ala Ala Ile Asn Thr Pro Thr Ser Leu
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Val Ile Ser Gly Thr Pro His Thr Val Gln His Ile Thr Thr Leu Cys
 1825 1830 1835 1840

Gln Gln Gln Gly Ile Lys Thr Lys Thr Leu Pro Thr Lys Asn Ala Phe
 1845 1850 1855

His Ser Pro His Thr Asn Pro Ile Leu Asn Gln Leu His Gln His Thr
 1860 1865 1870

Gln Thr Leu Thr Tyr His Pro Pro His Thr Pro Leu Ile Thr Ala Asn
 1875 1880 1885

Thr Pro Pro Asp Gln Leu Leu Thr Pro His Tyr Trp Thr Gln Gln Ala
 1890 1895 1900

Arg Asn Thr Val Asp Tyr Ala Thr Thr Thr Gln Thr Leu His Gln His
 1905 1910 1915 1920

Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro Asp Asn Thr Leu Thr Thr
 1925 1930 1935

Leu Thr His His Asn Leu Pro Asn Thr Pro Thr Thr Thr Leu Thr Leu
 1940 1945 1950

Thr His Pro His His His Pro Gln Thr His Leu Leu Thr Asn Leu Ala
 1955 1960 1965

Lys Thr Thr Thr Thr Trp His Pro His His Tyr Thr His His His Asn
1970 1975 1980

Gln Pro His Thr His Thr His Leu Asp Leu Pro Thr Tyr Pro Phe Gln
1985 1990 1995 2000

His Gln His Tyr Trp Leu Glu Ser Thr Gln Pro Gly Ala Gly Ser Gly
2005 2010 2015

Ser Gly Ser Gly Ser Gly Arg Ala Gly Thr Ala Gly Gly Thr Ala Glu
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Val Glu Ser Arg Phe Trp Asp Ala Val Ala Arg Gln Asp Leu Glu Thr
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His Gly Ile Thr Pro Ile Pro Leu Thr Leu Asn His Thr His Thr Asn
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Pro Gln His Leu His His Thr Arg Gln Gln Ala Gln Asn His Thr Thr
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Gly Pro Ile Thr Gly Leu Leu Ser Leu Leu Ala Leu Asp Glu Thr Pro

2165

2170

2175

His Pro His His Pro His Thr Pro Thr Gly Thr Leu Leu Asn Leu Thr
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Ile Ser Ser Glu Gln Asp Ala Ile Gly Gly Phe Pro Thr Asp Arg Gly
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Trp Asp Leu Asp Thr Leu Tyr Asp Pro Asp Pro Asp His Pro Gly Thr
2725 2730 2735

Cys Tyr Thr Arg Asn Gly Gly Phe Leu Tyr Asp Ala Gly His Phe Asp
2740 2745 2750

Ala Glu Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro
2755 2760 2765

Gln Gln Arg Leu Leu Leu Glu Thr Ala Trp Glu Thr Ile Glu His Ala

2770

2775

2780

Gly Ile Asn Pro His Thr Leu His Gly Thr Pro Thr Gly Val Phe Thr
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Gly Thr Asn Gly Gln Asp His Ala Ala His Ile Arg Gln Ala Pro Ser
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Asp Ala Gly Ser Gly Glu Glu Ala Ala Ala Gly Ser Pro Gly Val Trp
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Pro Trp Leu Val Ser Ala Lys Ser Gln Pro Ala Leu Arg Ala Gln Ala
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Asp Val Gly Tyr Thr Leu Ala His Ala Arg Ala Val Phe Asp His Arg
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Pro Gly Gly Thr Gly Thr Gly Glu Ala Ala Gly Lys Thr Ala Phe Ile
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Pro Tyr Ala Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg
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Leu Leu Thr Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His
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Ser Leu Gly Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu
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Thr Asp Ala Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr
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Met Pro Pro Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile
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Thr His His Leu Thr Ala His Glu Asn Asp Leu Ala Ile Ala Ala Ile

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3385

3390

Asn Thr Pro Thr Ser Leu Val Ile Ser Gly Thr Pro His Thr Val Gln
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Thr Thr Thr Leu Thr Leu Thr His Pro His His His Pro Gln Thr His
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Leu Leu Thr Asn Leu Ala Lys Thr Thr Thr Thr Trp His Pro His His
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Tyr Thr His His His Asn Gln Pro His Thr His Thr His Leu Asp Leu
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Pro Thr Tyr Pro Phe Gln His His His Tyr Trp Leu Glu Leu Pro Ser
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Ala Gln Thr Ser Pro Gly Gln Arg Arg Ser Arg Arg Ser Ala Pro Asp
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Thr Ala Glu Ser Glu Phe Trp Asp Ala Val Asn Glu Glu Asp Leu Gln
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Ser Leu Ala Glu Thr Leu Asp Ile Asp Ala Ser Ala Leu Asp Thr Val
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Val Pro Ala Leu Ser Ala Trp His Arg His Gln His Asp Gln Ala Arg
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Ile Asn Thr Trp Thr Tyr Gln Glu Thr Trp Lys Pro Leu Thr Leu Pro
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Asn His Thr Thr Gly Pro Ile Thr Gly Leu Leu Ser Leu Leu Ala Leu
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Pro Leu Trp Tyr Ala Thr Thr Asn Ala Thr Thr Thr His Pro Asn Asp
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Thr Pro Thr Pro His Gly Thr Thr Leu Ile Thr Gly Gly Thr Gly Ala
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Leu Ala Thr His Leu Thr His His Leu Thr Thr His Gln Pro Thr Gln
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His Leu Leu Leu Thr Ser Arg Thr Gly Pro His Thr Pro His Ala Gln
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His Leu Thr Thr Gln Leu Gln Gln Lys Gly Ile His Leu Thr Ile Thr
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Thr Cys Asp Thr Ser Asn Pro Asp Gln Leu Gln Gln Leu Leu Asn Thr
 3940 3945 3950

Ile Pro Pro Gln His Pro Leu Thr Thr Val Ile His Thr Ala Gly Val
 3955 3960 3965

Asn Leu Phe Ala Pro Val Ser Glu Thr Asp Ala Glu Ser Phe Ser Ser
 3970 3975 3980

Val Thr Ala Ala Lys Ala Thr Gly Ala Ala Ile Leu His Glu Leu Leu

3985

3990

3995

4000

Leu Asp His Glu Thr Leu Glu His Phe Ile Leu Phe Ser Ser Gly Ala
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Gly Ala Trp Gly Ser Gly Asn Gln Cys Ala Tyr Ser Ala Ala Asn Ala
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Tyr Leu Asp Ala Leu Ala Thr His Arg Gln Thr His Gly Leu Pro Gly
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Ala Ser Ile Ala Trp Gly Pro Trp Ala Gly Lys Gly Met Ser Ala Gly
 4050 4055 4060

Asp Ala Ala His Gly Tyr Leu Glu Lys Arg Gly Ile Leu Pro Met Glu
 4065 4070 4075 4080

Pro Arg Met Ala Leu Ala Ala Phe His Arg Ala Arg Ala Gln Arg Pro
 4085 4090 4095

Asn Ser Asn Leu Ile Ile Ala Asp Ile Asp Trp Glu Arg Phe Val Pro
 4100 4105 4110

Ala Phe Thr Ala Arg Arg His Ser Pro Leu Ile Glu Asp Ile Pro Glu
 4115 4120 4125

Val Arg Gln Ala Ala Gln Glu Leu Glu Ala Ala Ala Ser Thr Ala Lys
 4130 4135 4140

Thr Thr Thr Ala Gln Pro Ile Ala Thr Ser Leu Arg Glu Arg Leu Ala
 4145 4150 4155 4160

Arg Leu Thr Ser Ser Lys Gln Asn Gln Val Leu Leu Gly Leu Ile Arg
 4165 4170 4175

Thr Gly Ile Cys Thr Val Leu Gly Leu Arg Asn Pro Glu Gly Ile Glu
 4180 4185 4190

Asp Gln Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ser Ala		
4195	4200	4205
Gln Phe Ser Lys Glu Leu Ala Lys Glu Thr Gly Leu Pro Leu Pro Pro		
4210	4215	4220
Ser Leu Val Phe Asp Tyr Pro Thr Pro Gln Glu Cys Ala Ala His Leu		
4225	4230	4235 4240
Arg Thr Gln Leu Val Asp Leu Asp Asp Glu Glu Asp Ala Ala Leu Ser		
4245	4250	4255
Asn Ala Leu Pro Gln Val Ala His Arg Arg Thr Val Glu Asp Glu Pro		
4260	4265	4270
Ile Ala Ile Ile Gly Met Ala Cys Arg Phe Pro Gly Gly Val Arg Ser		
4275	4280	4285
Ala Asp Asp Leu Trp Glu Leu Leu Ala Ser Gly Lys Asp Ala Ile Gly		
4290	4295	4300
Val Phe Pro Thr Asp Arg Gly Trp Asp Leu Asp Thr Leu Tyr Asp Pro		
4305	4310	4315 4320
Asp Pro Asp His Pro Gly Thr Cys Tyr Thr Arg Asn Gly Gly Phe Leu		
4325	4330	4335
Tyr Gly Ala Gly His Phe Asp Ala Glu Phe Phe Gly Ile Ser Pro Arg		
4340	4345	4350
Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ala		
4355	4360	4365
Trp Glu Thr Ile Glu His Ala Gly Ile Asn Pro His Thr Leu His Gly		
4370	4375	4380
Thr Pro Thr Gly Val Phe Ala Gly Ile Asn Ala Gln Asp His Ala Ala		
4385	4390	4395 4400

His Ile Arg Gln Ser Arg Asp Val Glu Thr Ile Glu Gly Tyr Ala Leu
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Thr Gly Ser Ser Gly Ser Val Ala Ser Gly Arg Val Ala Tyr Thr Leu
4420 4425 4430

Gly Leu Glu Gly Pro Ala Val Ser Val Asp Thr Ala Cys Ser Ser Ser
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Leu Val Ala Leu His Trp Ala Ala Gln Ala Leu Arg Ala Gly Glu Cys
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Ser Met Ala Leu Ala Gly Gly Val Thr Val Met Ser Ser Pro Gly Thr
4465 4470 4475 4480

Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Ala Asp Gly Arg Cys
4485 4490 4495

Lys Ala Tyr Ser Ala Ala Ala Asp Gly Thr Gly Trp Ala Glu Gly Val
4500 4505 4510

Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly His
4515 4520 4525

Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala
4530 4535 4540

Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile
4545 4550 4555 4560

Arg Gln Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala
4565 4570 4575

Val Glu Gly His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala
4580 4585 4590

Gln Ala Leu Leu Ala Ala Tyr Gly Gln His Arg Pro His His Arg Pro

4595

4600

4605

Leu Trp Leu Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala
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Ala Gly Val Gly Gly Val Ile Lys Met Val Met Ala Leu Arg Asn Gly
 4625 4630 4635 4640

Leu Leu Pro Gln Thr Leu His Val Asp Glu Pro Thr Pro Gln Val Asp
 4645 4650 4655

Trp Ser Thr Gly Ala Val Gln Leu Leu Thr Gln Pro Val Pro Trp Pro
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Ala Asp Pro Ala Gly Arg Pro Arg His Ala Gly Val Ser Ser Phe Gly
 4675 4680 4685

Val Ser Gly Thr Asn Ala His Ile Ile Leu Glu Glu Ala Pro Thr Pro
 4690 4695 4700

Gln Asp Ser Asp Thr Asp Asp Glu Pro Pro Ala Asn Ala Pro Ala Leu
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Pro His Pro Leu Pro Leu Pro Val Pro Val Ser Ala Arg Ser Glu Ala
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Gly Leu Arg Ala Gln Ala Gln Ala Leu Arg Gln Tyr Val Ala Ala Arg
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Pro Asp Met Ser Pro Ala Asp Ile Gly Ala Gly Leu Ala Arg Gly Arg
 4755 4760 4765

Ala Val Leu Glu His Arg Ala Val Ile Leu Ala Ala Asp Arg Glu Glu
 4770 4775 4780

Leu Ala Gln Ala Leu Thr Ala Leu Ala Ala Gly Glu Pro His Pro His
 4785 4790 4795 4800

Ile Thr Thr Gly His Thr Arg Gly Gly Asp Arg Gly Gly Val Val Phe
4805 4810 4815

Val Phe Pro Gly Gln Gly Gly Gln Trp Ala Gly Met Gly Leu Thr Leu
4820 4825 4830

Leu Thr Ser Ser Pro Val Phe Ala Glu His Ile Asp Ala Cys Glu Lys
4835 4840 4845

Ala Leu Thr Pro Trp Val Pro Trp Ser Leu Thr Asp Ile Leu His Arg
4850 4855 4860

Asp Pro Asp Asp Pro Ala Trp Gln Gln Ala Asp Val Val Gln Pro Val
4865 4870 4875 4880

Leu Phe Ser Ile Met Val Ser Leu Ala Ala Leu Trp Arg Ser Tyr Gly
4885 4890 4895

Ile Glu Pro Asp Ala Val Leu Gly His Ser Gln Gly Glu Ile Ala Ala
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Ala His Ile Cys Gly Ala Leu Ser Leu Lys Asp Ala Ala Lys Thr Val
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Ala Leu Arg Ser Arg Ala Leu Ala Ala Val Arg Gly Arg Gly Ala Met
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Ala Ser Leu Pro Leu Pro Ala Gln Asp Val Gln Gln Leu Ile Ser Glu
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Arg Trp Glu Gly Gln Leu Trp Val Ala Ala Leu Asn Gly Pro His Ser
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Thr Thr Val Ser Gly Asp Thr Lys Ala Val Asp Glu Val Leu Ala His
4980 4985 4990

Cys Thr Asp Thr Gly Leu Arg Ala Lys Arg Ile Pro Val Asp Tyr Ala
4995 5000 5005

Ser His Cys Pro His Val Gln Pro Leu His Asp Glu Leu Leu His Leu
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Leu Gly Asp Ile Thr Pro Gln Pro Ser Thr Val Pro Phe Phe Ser Thr
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Val Glu Gly Thr Trp Leu Asp Thr Thr Thr Leu Asp Ala Ala Tyr Trp
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Tyr Arg Asn Leu His Gln Pro Val Arg Phe Ser His Ala Ile Gln Thr
 5060 5065 5070

Leu Thr Asp Asp Gly His Arg Ala Phe Ile Glu Ile Ser Pro His Pro
 5075 5080 5085

Thr Leu Val Pro Ala Ile Glu Asp Thr Thr Glu Asn Thr Thr Glu Asn
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Ile Thr Ala Thr Gly Ser Leu Arg Arg Gly Asp Asn Asp Thr His Arg
 5105 5110 5115 5120

Phe Leu Thr Ala Leu Ala His Thr His Thr Thr Gly Ile Gly Thr Pro
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Thr Thr Trp His His His Tyr Thr Gln Thr His Pro His Pro Asn Pro
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His Thr His Leu Asp Leu Pro Thr Tyr Pro Phe Gln His Gln His Tyr
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Trp Leu Gln Pro Pro Thr Thr Thr Thr Asp Leu Thr Thr Thr Gly Leu
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Thr Pro Thr His His Pro Leu Leu Thr Ala Thr Leu Thr Leu Ala Asp
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5205

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5215

Trp Leu Thr Asp His Thr Val Ala Gly Met Val Leu Leu Pro Gly Thr
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Ala Leu Leu Glu Leu Ala Leu Gln Ala Gly Glu Arg Val Asp Cys Pro
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Arg Val Glu Glu Leu Thr Leu His Ala Pro Leu Val Ile Pro His Thr
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Glu Asp Val Thr Leu Gln Val Thr Val Arg Ala Ala Asp Glu Ser Gly
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His Arg Ala Leu Ala Ile His Ser Tyr Ser Gly Thr Ala Ser Ser Ala
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Asp Arg Glu Trp Thr Arg His Ala Thr Gly Leu Leu Thr His His Ala
5300 5305 5310

Asp Thr Asp His Arg Ala Asp Thr His Thr Asp Ala Cys Leu Gly Gly
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Ser Trp Pro Pro Pro Gly Ala Gln Pro Ile Glu Leu Gly Asp Val Tyr
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Gly Arg Met Ala Ala Asp Ser Asp Ile Ala Tyr Gly Pro Val Phe Gln
5345 5350 5355 5360

Gly Leu His Ala Ala Trp Arg Phe Gly Asp Asp Val Leu Ala Glu Val
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Arg Leu Pro Glu Glu Ala Leu Arg Asp Ala Pro Ala Ala Ala Phe Gly
5380 5385 5390

Val His Pro Ala Leu Leu Asp Ala Ala Leu His Ala Thr Ala Leu Thr
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Pro Gln Asn Gly Asp Gly Ser Thr Glu Asn Val Ala Gln Glu Ser Met
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Pro Asp Arg Ala Ala His Gln Ala Arg Leu Pro Phe Ser Trp Ser Gly
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Val Ser Leu His Thr Ala Gly Ser Ser Val Leu Arg Val Arg Leu Ser
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Arg Ser Pro Gln His Gly Asn Ala Val Ala Leu Thr Ala Ala Asp Glu
 5460 5465 5470

Asp Gly Arg Pro Val Val Thr Ile Glu Ser Leu Ala Leu Arg Pro Val
 5475 5480 5485

Ser Thr Glu Glu Leu Arg Ala Ala Ala Asp Arg Thr Pro Glu His Glu
 5490 5495 5500

Ser Leu Phe Arg Leu Asp Trp Val Ser Val Pro Val Pro Ala Asn Ala
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Pro Ser Pro Thr Ala Asp Arg Pro Trp Ala Val Ile Gly Ala Gly Leu
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Pro His Leu Pro Gly Leu Thr Glu His Glu His Val Thr Ala Tyr Asp
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Glu Pro Ala Asp Leu Leu Leu Ala Leu Asp Arg Gly Ala Pro Pro Pro
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Gly Val Leu Val Val Gly Gly Val Ala His Thr Glu Ala Arg Glu Tyr
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Ser Ala Glu Ala Pro Gly Glu Arg Gly Thr Glu Ala Cys Glu Ala Arg
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Pro Asp Val Val His Val Gly Val Val His Thr Ala Ala Val His Ala
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Arg Leu Ala Asp Ser Arg Leu Leu Val Leu Thr Cys Gly Ala Val Ala
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Arg Ala Ser Gly Asp Asp Ala Thr Asp Leu Pro Gly Ala Ala Val Trp
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Gly Leu Val Arg Ser Ala Gln Ser Glu His Pro Asp Arg Ile Thr Leu
5665 5670 5675 5680

Leu Asp Phe Glu Arg Gly Thr Glu Ala Glu Pro Gly Gln Leu Ala Thr
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Ala Leu Asn Cys Gly Glu Arg Gln Leu Ala Val Arg Pro Gly Gly Leu
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Phe Thr Pro Arg Leu Val Arg Ala Pro Arg Val Ala Asp Ala Val Pro
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Ala Val Pro Ala Val Ala Val Pro Ser Ala Gly His Ala Ala Val Pro
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Ala Ala Gly Pro Phe Leu Pro Gly Gly Thr Val Leu Ile Thr Gly Gly
5745 5750 5755 5760

Thr Gly Val Leu Gly Arg Leu Val Ala Arg His Leu Val Glu Ala His
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Gly Val Arg His Leu Leu Leu Ala Gly Arg Arg Gly Pro Asp Ala Glu
5780 5785 5790

Gly Ala Pro Glu Leu Arg Ala Glu Leu Gly Gly Leu Gly Ala Thr Val
5795 5800 5805

Glu Val Val Ala Cys Asp Ala Ala Asp Arg Gln Gln Leu Ala Asp Leu

5810

5815

5820

Leu Thr Arg Ile Pro Asp Asp Arg Pro Leu Thr Gly Val Val His Ser
 5825 5830 5835 5840

Ala Gly Ile Leu Asp Asp Gly Val Ile Thr Ser Leu Ser Pro Glu Arg
 5845 5850 5855

Leu Gly Ala Val Leu Arg Ala Lys Ala Asp Ala Ala Leu Leu Leu Asp
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Glu Leu Thr Arg Gly Ala Glu Leu Ser Ala Phe Val Met Phe Ser Ser
 5875 5880 5885

Ala Ser Ala Val Val Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala
 5890 5895 5900

Asn Ala Val Leu Asp Phe Leu Ala His Arg Arg Arg Ala Glu Gly Leu
 5905 5910 5915 5920

Pro Ala Val Ser Leu Ala Trp Gly Leu Trp Glu Glu Gly Thr Gly Met
 5925 5930 5935

Thr Gly His Leu Asp Val Asp Asp His Ala Arg Ile Ser Arg Ala Gly
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Met Arg Pro Leu Pro Thr Ala Glu Ala Leu Ala Leu Phe Asp Ala Ala
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Leu Ala Asp Gly Glu Pro Phe Leu Met Pro Ala Arg Leu Asp Leu Thr
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Ala Val Arg Ser Gly Ala Ala Ser Ala Pro Val Pro Pro Leu Leu Gln
 5985 5990 5995 6000

Gly Leu Leu Gln Leu Pro Arg Ser Arg Ser Ala Ala Ala Ala Pro Gly
 6005 6010 6015

His Gly Ala Pro Ala Ala Asp Glu Ala Ala Ala Trp Arg Glu Arg Leu
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Ala Arg Gln Ser Ala Gly Glu Arg Arg Gln Ala Leu Leu Arg Leu Val
6035 6040 6045

Arg Ser His Val Ala Ala Val Leu Gly His Ser Gly Ala Asp Gly Ile
6050 6055 6060

Asp Ala Ser Arg Ala Phe Arg Glu Leu Gly Phe Asp Ser Leu Thr Ala
6065 6070 6075 6080

Val Glu Leu Arg Asn Arg Leu Thr Ala Ala Thr Gly Leu Arg Leu Arg
6085 6090 6095

Ala Thr Leu Ala Phe Asp Phe Pro Thr Pro Ala Ala Leu Ala Glu His
6100 6105 6110

Leu Gly Glu Arg Leu Leu Pro Asp Gln Glu Ala Thr Gly Glu Gln Ala
6115 6120 6125

Gly Asp Gln Leu Ser Gly Gly Ser Glu Glu Asp Val Arg Ser Leu Leu
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Thr Ser Ile Pro Ile Gly Arg Leu Arg Asp Ala Gly Leu Leu Gly Pro
6145 6150 6155 6160

Leu Leu Thr Leu Ala Asp Thr Gly Arg Gly Ala Ser Gly Ala Ala Ala
6165 6170 6175

Gly Pro Glu Asp Ala Pro Pro Ser Gly Gln Asp Thr Pro Ala Pro Val
6180 6185 6190

Ser Ile Asp Glu Met Asp Ile Asp Asp Leu Met Asp Leu Ala His Gly
6195 6200 6205

His Gly Thr Ala Pro Ala Arg Glu Pro Ala Asp Ala Glu Asp Ser Ser
6210 6215 6220

Ser Ser Arg Asn Arg Thr His His Thr His Glu Gly Glu Thr Ala
 6225 6230 6235

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<211> 4881

<212> PRT

<213> Streptomyces avermitilis

<400> 5

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 20 25 30

Gln Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg Phe Pro Gly Gly
 35 40 45

Val Glu Ser Ala Glu Asp Phe Trp Glu Leu Ile Ala Ser Gly Arg Asp
 50 55 60

Ala Val Gly Glu Phe Pro Val Asp Arg Gly Trp Asp Val Glu Ala Phe
 65 70 75 80

Tyr Asp Pro Glu Pro Gly Arg Ala Gly Ser Ser Tyr Thr Arg Arg Gly
 85 90 95

Gly Phe Leu Glu Gly Ala Ala Glu Phe Asp Ala Gly Phe Phe Gly Ile
 100 105 110

Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Met Leu
 115 120 125

Glu Val Ser Trp Glu Ala Leu Glu Arg Ala Gly Ile Asp Pro Ala Thr
 130 135 140

Leu Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Leu Met Ser Gln Asp
145 150 155 160

Tyr Ala Thr Arg Leu Leu Ser Val Pro Asp Asp Leu Ala Gly Tyr Leu
165 170 175

Gly Asn Gly Asn Ala Gly Ser Ile Leu Ser Gly Arg Val Ala Tyr Thr
180 185 190

Phe Gly Phe Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser
195 200 205

Ser Leu Val Ala Leu His Leu Ala Cys Gln Ser Leu Arg Thr Gly Glu
210 215 220

Ser Ser Phe Ala Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Gly
225 230 235 240

Met Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ser Pro Asp Gly Arg
245 250 255

Cys Lys Ala Tyr Ala Ser Ala Ala Asp Gly Thr Gly Met Ser Glu Gly
260 265 270

Val Gly Ile Leu Leu Leu Glu Arg Leu Ser Glu Ala Glu Arg Arg Gly
275 280 285

His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly
290 295 300

Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
305 310 315 320

Ile Arg Gln Ala Leu Ala Cys Ala Gly Leu Ser Val Ala Asp Val Asp
325 330 335

Val Val Glu Gly His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu
340 345 350

Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Arg Ala Gly Asp Thr Pro
355 360 365

Val Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Ala Gln Ala Ala
370 375 380

Ala Gly Val Ala Gly Val Ile Lys Met Val Met Ala Leu Arg Ala Gly
385 390 395 400

Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser Ser Gln Val Asp
405 410 415

Trp Ser Ser Gly Ser Val Arg Val Leu Ala Asp Glu Val Glu Trp Pro
420 425 430

Gly Val Glu Gly Arg Leu Arg Arg Ala Gly Val Ser Ala Phe Gly Val
435 440 445

Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala Ser Gly Gly Ala
450 455 460

Gly Gly Gly Ala Gly Arg Leu Gln Glu Leu Gly Pro Gly Val Val Ser
465 470 475 480

Gly Ser Gly Val Val Pro Trp Val Val Ser Ala Arg Ser Glu Leu Ala
485 490 495

Leu Arg Gly Gln Ala Arg Arg Leu Arg Gly Val Val Ala Val Gly Gly
500 505 510

Gly Ala Asp Gly Val Gly Val Ser Pro Ala Gly Val Gly Arg Ala Leu
515 520 525

Val Ser Glu Arg Ser Val Phe Glu His Arg Ala Val Val Val Ala Glu
530 535 540

Asp Arg Asp Glu Phe Leu His Ala Leu Asp Ala Leu Ala Gly Gly Arg

545 550 555 560

Pro Val Pro Gly Val Val Glu Gly Arg Thr Thr Ser Gly Glu Leu Ala
565 570 575

Val Leu Phe Ala Gly Gln Gly Thr Gln Arg Ala Gly Met Gly Arg Glu
580 585 590

Leu Tyr Glu Ala Tyr Pro Val Phe Ala Gln Ala Ile Asp Glu Ile Cys
595 600 605

Ala Glu Ala Asp Thr Ala Arg Thr Asp Pro Gly Ala Pro Gly Leu Arg
610 615 620

Asp Val Leu Phe Ala Pro Gln Asp Ser Pro Glu Gly Arg Leu Ile Glu
625 630 635 640

Asp Thr Gly Phe Ala Gln Pro Ala Leu Phe Ala Phe Glu Val Ala Leu
645 650 655

Phe Arg Leu Leu Glu Thr Trp Gly Leu Thr Pro Asp Tyr Val Leu Gly
660 665 670

His Ser Val Gly Glu Leu Ala Ala Ala His Val Ala Gly Met Leu Cys
675 680 685

Leu Ala Asp Ala Val Ala Leu Val Val Ala Arg Gly Arg Leu Met Gln
690 695 700

Gly Leu Pro Ser Gly Gly Ala Met Val Ala Ile Glu Ala Ser Glu Asp
705 710 715 720

Glu Ile Leu Pro Leu Pro Asp Glu Tyr Ala Ser Arg Val Ala His Ala
725 730 735

Ala Val Asn Gly Pro Arg Ser Ile Val Leu Ser Gly Asp Glu Asp Ala
740 745 750

Val Leu Asp Leu Ala Gln Gln Trp Ala Ala Arg Gly Arg Arg Thr Arg
755 760 765

Arg Leu Arg Thr Ser His Ala Phe His Ser Pro His Met Asp Ala Met
770 775 780

Leu Gly Asp Phe Arg Arg Ala Ala Glu Gln Val Thr Phe Ser Ala Pro
785 790 795 800

Arg Ile Pro Val Val Ser Asn Val Thr Gly Ala Pro Leu Pro Ala Glu
805 810 815

Thr Met Cys Thr Pro Asp Tyr Trp Val Glu His Ala Arg Ser Thr Val
820 825 830

Arg Phe Ala Asp Gly Ile Ser Trp Leu Gln Glu Gln Gly Val Thr Thr
835 840 845

Cys Leu Glu Ile Gly Pro Asp Gly Thr Leu Ser Ala Leu Ala Gln Asp
850 855 860

Ser Leu Ser Ala Pro Ala Arg Ala Ile Pro Ala Leu Arg Pro Asp Gln
865 870 875 880

Pro Glu Ala Arg Ser Val Met Thr Ala Leu Ala Glu Leu Phe Val Ala
885 890 895

Gly Thr Ala Val Glu Trp Ala Gly Val Phe Glu Gly Thr Ala Arg Glu
900 905 910

Val Gly Asp Gly Cys Gly Val Glu Leu Pro Thr Tyr Ala Phe Glu Arg
915 920 925

Glu Arg Phe Trp Leu Asp Val Glu Glu Gly Ser Ala Gly Gly Ser Gly
930 935 940

Val Ser Gly Met Trp Gly Gly Pro Leu Trp Glu Ala Val Glu Cys Gly
945 950 955 960

Asp Ala Gly Val Val Ala Ser Leu Leu Gly Val Asp Glu Gly Ala Ser
 965 970 975

Leu Gly Ala Val Val Ser Ala Leu Gly Glu Trp Gly Arg Val Arg His
 980 985 990

Glu Arg Glu Val Val Asp Gly Trp Arg Tyr Arg Glu Val Trp Arg Pro
 995 1000 1005

Val Ser Gly Gly Gly Val Gly Gly Leu Ser Gly Ala Trp Leu Val Val
 1010 1015 1020

Ser Glu Gly Glu Ala Gly Pro Val Asp Val Val Ala Glu Gly Leu Glu
 1025 1030 1035 1040

Arg Cys Gly Ala Arg Val Val Arg Val Glu Val Glu Ala Gly Cys Val
 1045 1050 1055

Ser Arg Glu Val Leu Ala Gly His Leu Arg Glu Ala Val Asp Gly Glu
 1060 1065 1070

Ala Val Gly Gly Val Val Ser Leu Val Gly Trp Gly Ser Gly Val Val
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Gln Ala Gly Val Ala Ser Val Gly Leu Val Gln Ala Leu Gly Asp Val
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Gly Val Gly Ala Arg Leu Trp Cys Val Thr Gly Gly Ala Val Ser Val
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Gly Gly Arg Asp Ala Val Trp Gly Pro Ala Ser Gly Val Val Trp Gly
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Leu Gly Arg Val Val Gly Ala Glu Ala Pro Asp Arg Trp Gly Gly Leu
 1140 1145 1150

Val Asp Val Pro Glu Leu Val Asp Glu Arg Val Val Asp Gly Leu Val

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Glu Ala Val Ala Glu Arg Glu Trp Arg Pro Arg Gly Thr Val Leu Val		
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Thr Gly Gly Thr Gly Glu Leu Gly Ala His Val Ala Arg Trp Met Ala		
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Arg Arg Gly Ala Glu His Leu Leu Leu Val Ser Arg Arg Gly Glu Ser		
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Ala Gln Gly Val Glu Glu Leu Arg Ala Asp Leu Met Gly Leu Gly Ala		
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Arg Val Ser Val Val Ala Cys Asp Ala Ala Asp Arg Glu Ala Leu Ala		
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Glu Val Leu Arg Ser Ala Val Pro Ala Glu Cys Pro Leu Gly Val Val		
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Val His Ala Ala Gly Val Val Asp Asp Gly Val Leu Glu Gly Leu Ser		
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Ser Glu Arg Val Thr Gly Val Leu Arg Ala Lys Ala Leu Ala Ala Trp		
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Asn Leu His Glu Leu Thr Arg Gly Ala Asp Leu Ser Gly Phe Val Val		
1330	1335	1340
Phe Ser Ser Ala Ala Ala Thr Phe Gly Pro Ala Gly Gln Gly Ser Tyr		
1345	1350	1355 1360

Ala Ala Ala Asn Ala Tyr Val Glu Ala Ile Val Arg His Arg Arg Gly
1365 1370 1375

Glu Gly Leu Pro Gly Leu Ala Val Ala Trp Gly Pro Trp Ala Gly Gly
1380 1385 1390

Gly Met Ala Glu Gly Ala Val Gly Gln Met Arg Arg Arg Gly Leu Ala
1395 1400 1405

Ala Met Thr Pro Glu Thr Ala Leu Val Ala Leu Gly Gln Ala Leu Asp
1410 1415 1420

His Asp Glu Thr Cys Val Thr Val Ala Asp Ile Asp Trp Asp Arg Phe
1425 1430 1435 1440

Thr Ala Asn Ser Leu Pro Gly Ser Arg Leu Ser Pro Leu Ile Ser Asp
1445 1450 1455

Ile Pro Glu Ala Arg Leu Ala Arg Glu Thr Thr Gly Leu Asp Thr Ala
1460 1465 1470

Thr Ala Ser Pro Asp Ser Phe Ser Ala Arg Leu Lys Ala Met Asp Thr
1475 1480 1485

Ala Glu Gln Glu Arg Ala Leu Leu Asp Leu Val Arg Thr Tyr Ala Ala
1490 1495 1500

Thr Val Leu Gly His Ser Thr Pro Thr Ala Val Arg Pro Glu Arg Ala
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Phe Arg Asp Leu Gly Phe Val Ser Val Ser Ala Val Glu Leu Arg Asn
1525 1530 1535

Arg Leu Asn Ala Val Thr Gly Leu Leu Leu Pro Thr Thr Leu Ile Phe
1540 1545 1550

Asp Tyr Pro Thr Pro Ser Ala Leu Ala Gly Tyr Leu Lys Glu Gln Leu
1555 1560 1565

Glu Glu Gly Ala Gly Gly Gln Arg Asp Ile Ala Pro Pro Val Pro Ala
 1570 1575 1580

Ser Arg Val Asp Val Asp Glu Pro Ile Ala Ile Val Gly Met Ala Cys
 1585 1590 1595 1600

Arg Phe Pro Gly Gly Val Glu Ser Ala Glu Asp Leu Trp Glu Leu Val
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Ala Ser Gly Arg Asp Ala Val Gly Glu Phe Pro Val Asp Arg Gly Trp
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Asp Val Glu Ala Phe Tyr Asp Pro Glu Pro Gly Arg Ala Gly Ser Ser
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Tyr Thr Arg Arg Gly Gly Phe Leu Glu Gly Ala Ala Glu Phe Asp Ala
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Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln
 1665 1670 1675 1680

Gln Arg Leu Met Leu Glu Val Ser Trp Glu Ala Leu Glu Arg Ala Gly
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Ile Asp Pro Ala Thr Leu Arg Gly Ser Thr Thr Gly Val Phe Ala Gly
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Met Cys Ser Gln Asp Tyr Ala Asp Leu Val Arg Arg Ala Thr Glu Asp
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Leu Glu Gly Tyr Ala Met Thr Gly Leu Ser Ser Ser Val Thr Ser Gly
 1730 1735 1740

Arg Val Ala Tyr Thr Leu Gly Leu Glu Gly Pro Ala Val Thr Val Asp
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Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Gln Ala

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1765

1770

1775

Leu Arg Ser Gly Glu Cys Ser Leu Ala Leu Ala Gly Gly Val Thr Val
1780 1785 1790

Met Ser Thr Pro Gly Ala Phe Val Glu Phe Ser Arg Gln Arg Gly Leu
1795 1800 1805

Ser Pro Asp Gly Arg Cys Lys Ala Tyr Gly Ser Gly Ala Asp Gly Val
1810 1815 1820

Gly Trp Ala Glu Gly Val Gly Val Leu Leu Val Glu Arg Leu Ser Glu
1825 1830 1835 1840

Ala Glu Arg Arg Gly His Arg Val Leu Ala Val Val Arg Gly Ser Ala
1845 1850 1855

Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro
1860 1865 1870

Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala Cys Ala Gly Leu Ser
1875 1880 1885

Val Ala Asp Val Asp Val Val Glu Gly His Gly Thr Gly Thr Thr Leu
1890 1895 1900

Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gly
1905 1910 1915 1920

Arg Ser Gly Glu Arg Pro Val Trp Leu Gly Ser Val Lys Ser Asn Ile
1925 1930 1935

Gly His Ala Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val
1940 1945 1950

Met Ala Leu Arg Ala Gly Val Leu Pro Arg Thr Leu His Val Asp Glu
1955 1960 1965

Pro Ser Ser Gln Val Asp Trp Ser Ser Gly Ser Val Arg Val Leu Ala
1970 1975 1980

Asp Glu Val Glu Trp Pro Gly Val Glu Gly Arg Leu Arg Arg Ala Gly
1985 1990 1995 2000

Val Ser Ala Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu
2005 2010 2015

Glu Ala Ser Gly Gly Ala Asp Gly Gly Ala Gly Arg Leu Gln Glu Leu
2020 2025 2030

Gly Pro Gly Val Val Ser Gly Ser Gly Val Val Pro Trp Val Val Ser
2035 2040 2045

Ala Arg Ser Glu Leu Ala Leu Arg Gly Gln Ala Arg Arg Leu Arg Gly
2050 2055 2060

Val Val Ala Val Gly Gly Gly Ala Asp Gly Val Gly Val Ser Pro Ala
2065 2070 2075 2080

Gly Val Gly Arg Ala Leu Val Ser Glu Arg Ser Val Phe Glu His Arg
2085 2090 2095

Ala Val Val Val Ala Glu Asp Arg Asp Glu Phe Leu His Ala Leu Asp
2100 2105 2110

Ala Leu Ala Glu Gly Ala Pro Thr Ala Gly Val Val Gln Gly Val Ala
2115 2120 2125

Gly Pro Ala Ala Asp Gly Lys Ile Ala Met Leu Phe Gly Gly Gln Gly
2130 2135 2140

Thr His Trp Glu Gly Met Ala Gln Glu Leu Leu Gly Ser Ser Pro Val
2145 2150 2155 2160

Phe Ala Gln Gln Met Ser Asp Cys Ala Gln Ala Leu Glu Pro Tyr Leu
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Asp Trp Ser Leu Leu Asp Val Leu Arg Gly Ala Pro Asp Ala Pro Pro
2180 2185 2190

Leu Gln Arg Val Asp Val Val Gln Pro Val Leu Phe Ala Val Met Val
2195 2200 2205

Ser Leu Ala Ala Leu Trp Arg Ser Tyr Gly Val His Pro Asp Ala Val
2210 2215 2220

Ala Gly His Ser Gln Gly Glu Ile Ala Ala Ala Tyr Val Ala Gly Ala
2225 2230 2235 2240

Leu Ser Leu Asp Asp Ala Ala Arg Val Thr Ala Leu Arg Ser Gln Ala
2245 2250 2255

Leu Ala Ala Leu Ala Gly Gln Gly Ala Met Ala Ser Val Gly Leu Pro
2260 2265 2270

Val Glu Lys Leu Glu Pro Arg Leu Ala Thr Trp Gly Asp Arg Leu Val
2275 2280 2285

Ile Ala Ala Val Asn Gly Ala Arg Ser Ala Val Val Ser Gly Glu Pro
2290 2295 2300

Glu Ala Val Asp Ala Leu Val Glu Glu Leu Ser His Glu Asp Val Pro
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Ala Arg Arg Leu Met Val Asp Trp Ala Ser His Ser Pro Gln Val Glu
2325 2330 2335

Ala Ile Gln Gly Arg Leu Leu Glu Leu Leu Ala Pro Ile Arg Ala Arg
2340 2345 2350

Thr Gly Asp Val Pro Phe Tyr Ser Thr Val Thr Gly Glu Arg Ile Asp
2355 2360 2365

Gly Thr Glu Leu Asp Ala Asp Tyr Trp Tyr Arg Asn Leu Arg Gln Val

2370

2375

2380

Val Arg Phe Arg Asp Ala Thr Gln Ala Leu Val Arg Ala Gly His Thr
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Val Phe Ile Glu Ala Cys Pro His Pro Ala Val Ala Val Gly Val Gln
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Glu Thr Leu Asp Glu Met Gly Asp Leu Asp Ser Leu Val Val Gly Ser
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Leu Arg Arg Gly Glu Gly Gly Leu Arg Arg Phe Leu Met Ser Val Ala
 2435 2440 2445

Glu Leu Phe Val Gly Gly Val Ala Val Glu Trp Ser Gly Val Phe Gly
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Ser Val Gly Arg Gly Val Ala Gly Gly Cys Gly Val Glu Leu Pro Thr
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Tyr Ala Phe Glu Arg Glu Arg Phe Trp Leu Asp Val Glu Gly Ala Pro
 2485 2490 2495

Arg Gly Ser Gly Val Ser Gly Gln Trp Gly Gly Gln Leu Ser Glu Ala
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Val Asp Thr Val Arg Gly Gly Met Leu Arg Asp Cys Leu Ala Gly Leu
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Asp Pro Ala Ala Gln Ala Glu Thr Val Leu Asp Leu Val Leu Thr His
 2530 2535 2540

Ala Ala Ala Val Leu Gly His Gly Thr Ala Asp Ala Val Val Pro Glu
 2545 2550 2555 2560

Arg Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu
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Arg Asn Arg Leu Asn Thr Ala Thr Gly Leu Arg Phe Pro Arg Thr Leu
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Val Phe Asp His Pro Arg Pro Val Ala Leu Ala Ala His Ile His Glu
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Gln Leu Ser Gly Gly Ser Pro Thr Thr Gly Thr Ala Leu Ala Leu Ala
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Leu Arg Ala Pro Ala Pro Arg Val Asp Val Asp Glu Pro Ile Ala Ile
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Val Gly Met Ala Cys Arg Phe Pro Gly Gly Val Glu Ser Ala Glu Asp
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Val Asp Arg Gly Trp Asp Val Glu Ala Phe Tyr Asp Pro Glu Pro Gly
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Arg Ala Gly Thr Ser Tyr Thr Arg Cys Gly Gly Phe Leu Gln Gly Ala
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Ala Glu Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
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Ala Met Asp Pro Gln Gln Arg Leu Met Leu Glu Val Ser Trp Glu Ala
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Leu Glu Arg Ala Gly Ile Asp Pro Ala Thr Leu His Gly Ser Thr Thr
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Gly Val Phe Ala Gly Val Ser Gln Gln Asp Tyr Ala Glu Leu Leu Arg
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Arg Gly Thr Gln Asp His Glu Gly Tyr Ala Leu Thr Gly Val Ser Asn
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Ser Val Val Ser Gly Arg Leu Ser Tyr Thr Phe Gly Phe Glu Gly Pro
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Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His
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Gly Gly Val Thr Val Met Ser Thr Pro Gly Ala Phe Val Glu Phe Ser
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Glu Arg Leu Ser Glu Ala Glu Arg Arg Gly His Arg Val Leu Ala Val
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Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala
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Thr Tyr Gly Gln Gly Arg Ser Gly Glu Arg Pro Val Trp Leu Gly Ser
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Pro His Val Val Asp Ala Thr Gly Pro Ala Asp Leu Thr Glu Pro Gln
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Ser Ala Glu Pro Glu Cys Val Ala Asp Ala Met Ser Glu Met Ser Ala
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Glu Cys Val Ala Glu Ala Val Ser Asp Lys Ser Ala Glu Pro Glu Cys
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Val Ala Asp Ala Met Ser Asp Lys Pro Ala Leu Leu Pro Ile Pro Trp
 3155 3160 3165

Leu Leu Ser Ala Lys Ser Glu Arg Ala Leu Arg Gly Gln Ala Arg Arg
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Leu Arg Gln Phe Ala Ala Arg Ala Ser Asp Ala Arg Pro Ala Asp Val

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3185

3190

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Ala His Ala Leu Ala Ala Gln Arg Ser Val Phe Asp His Arg Ala Val
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Val Val Ala Glu Asp Arg Asp Gly Phe Leu Gln Ala Leu Asp Ala Leu
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Ala Glu Gly Arg Ser Ala Asp Gly Leu Ile Glu Gly Ser Val Gly Pro
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Arg Gly Gly His Ser Gly Arg Arg Arg Gly Lys Thr Ala Met Leu Phe
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Ala Gly Gln Gly Thr Gln Arg Val Gly Met Gly Arg Gln Leu Tyr Ala
3265 3270 3275 3280

Ala His Pro Ala Tyr Ala Asp Ala Leu Asp Gln Val Leu Ala Glu Leu
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Asp Gly His Leu Asp Gln Pro Leu Arg Pro Leu Ile His Ala Ser Ala
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Asp Leu Ala Asp Val Ala Asp Ala Ala Asp Val Leu Asp Arg Thr Arg
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Tyr Ala Gln Pro Ala Leu Phe Ala Val Gln Val Ala Leu Phe Arg His
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Leu Glu Arg Leu Gly Val Arg Ala Asp Phe Val Ala Gly His Ser Ile
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Gly Glu Leu Ala Ala Ala His Val Ala Gly Val Leu Pro Leu Ala Ala
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Pro Gly Gly Ala Met Val Ala Val Arg Ala Ser Glu Ala Glu Ala Arg
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Asp Ala Ile Ser Arg Leu His Thr Asp Gly Val Arg Thr Phe Met Glu
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Ala Thr Ala Asp Ser His Pro Ala Asp Asp Asp Thr Gly Thr Pro Gln
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Glu Asn Leu Leu Ile Pro Leu Leu Arg Pro Asp Ser Pro Glu Pro Gly
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Phe Arg Pro Val Ser Ala Glu Gln Leu Gln Ala Ala Arg Thr Gly Tyr
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His Asp His Leu Phe Arg Ile Glu Trp Arg Pro Leu His Leu Pro Thr
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Pro Asp Pro Ala Ala Leu Ala Glu Ala Leu Ala Ala Gly Ala Pro Ala
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Gly Ser Ala Pro Ala Asp Ser Thr Ala Leu Ala Asp Ala Thr Arg Gln
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Ala Thr Pro Asp Glu Pro Val Ser Asp Leu Ala His Ala Ala Val Trp
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Arg His Leu Leu Leu Ala Thr Arg Arg Gly Thr Ala Ala Asp Gly Ala
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His Gly Leu Ile Arg Ile Pro Ala Arg Arg Ser Ala Asp His Gly Ile
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Ile Pro Ala Gln Arg Thr Gly Leu Leu Leu Glu Leu Val Arg Thr His
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Ala Gly Thr Pro Asp Glu Pro Ala Pro Ala Ala Ala Ala Ala Gly Ala
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Glu Lys Gln Gln Thr Arg Gly Gly Thr Ser Thr Glu Thr Val Glu Ser
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Leu Phe Trp Ile Gly His Asp Thr Arg Arg Ile Glu Glu Ser Met Ala
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Asp Ile Pro Glu Pro Thr Phe Val Arg Leu Ala Gln Gly Glu Ala Arg
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Ala Gln Gly Glu Ala Leu Ala Arg Gly Glu Thr Arg Pro Ala Leu Ile
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Cys Leu Pro Thr Val Ala Ala Val Ser Ser Val Tyr Gln Tyr Ser Arg
4675 4680 4685

Phe Ala Ala Gly Leu Asn Gly His Arg Asp Val Trp Tyr Val Pro Ala
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Pro Gly Phe Leu Glu Gly Glu Pro Leu Pro Ser Gly Ile Gly Ala Val
4705 4710 4715 4720

Thr Arg Met Phe Ala Asp Ala Ile Val Arg Phe Thr Asp Gly Ala Pro
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Phe Ala Leu Ala Gly His Ser Ala Gly Gly Trp Phe Val Tyr Ala Val
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Thr Ser His Leu Glu Arg Leu Gly Val Arg Pro Glu Ala Val Val Thr
4755 4760 4765

Met Asp Ala Tyr Leu Pro Asp Asp Gly Ile Ala Pro Val Ala Ser Ala
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Leu Thr Ser Glu Ile Phe Asp Arg Val Thr Gln Phe Val Asp Val Asp
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Tyr Thr Arg Leu Val Ala Met Gly Gly Tyr Phe Arg Ile Phe Ser Gly
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Asp Gly Glu Gln Met Pro Pro Pro Trp Gly Val Pro His Thr Val Leu
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Asp Ile Gln Gly Asn His Phe Thr Met Leu Glu Gln Phe Ala Asp Ser
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Thr Ala Arg His Val Asp Glu Trp Leu Thr Glu Ile Ala Ser Val Arg
 4865 4870 4875 4880

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 <213> Streptomyces avermitilis

<400> 6
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Met Glu Ala Ser Ser Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg
 35 40 45

Phe Pro Gly Gly Val Cys Ser Pro Glu Glu Leu Trp Glu Leu Val Ala
 50 55 60

Ser Gly Gly Asp Ala Ile Gly Glu Phe Pro Ala Gly Arg Gly Trp Asp
 65 70 75 80

Leu Glu Gly Leu Phe Asp Ser Asp Pro Asp Arg Ser Gly Thr Ser Tyr

85

90

95

Ala Arg Tyr Gly Gly Phe Leu Tyr Glu Ala Gly Glu Phe Asp Ala Asp
 100 105 110

Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
 115 120 125

Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile
 130 135 140

Asp Pro Leu Ser Met Arg Gly Ser Arg Thr Gly Val Phe Ala Gly Val
 145 150 155 160

Met Tyr His Asp Tyr Gly Ser Arg Leu Gly Thr Ile Pro Glu Gly Phe
 165 170 175

Glu Gly Tyr Ile Gly Asn Gly Ser Gly Gly Ala Val Ala Ser Gly Arg
 180 185 190

Val Ala Tyr Thr Leu Gly Leu Glu Gly Pro Ala Val Ser Val Asp Thr
 195 200 205

Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys Gln Ser Leu
 210 215 220

Arg Ser Gly Glu Cys Thr Leu Ala Leu Ala Gly Gly Val Thr Val Met
 225 230 235 240

Ser Thr Pro His Leu Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ser
 245 250 255

Val Asp Gly Arg Cys Lys Ser Phe Ala Gly Gly Ala Asp Gly Thr Gly
 260 265 270

Met Gly Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala
 275 280 285

Val Arg Leu Gly His Arg Val Leu Ala Val Leu Arg Gly Ser Ala Val
290 295 300

Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ala
305 310 315 320

Gln Glu Arg Val Ile Arg Gln Ala Leu Ala Asn Ala Gly Leu Ser Val
325 330 335

Ala Asp Val Asp Val Val Glu Gly His Gly Thr Gly Thr Thr Leu Gly
340 345 350

Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Arg Ala
355 360 365

Gly Asn Arg Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His
370 375 380

Ala Gln Ala Ala Ala Gly Val Gly Gly Val Ile Lys Met Val Met Ala
385 390 395 400

Leu Arg Glu Gly Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser
405 410 415

Pro Gln Val Asp Trp Ser Ala Gly Ala Val Arg Leu Leu Thr Glu Ala
420 425 430

Val Pro Trp Pro Gly Asp Ala Ala Gly Arg Leu Arg Arg Ala Gly Val
435 440 445

Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile Leu Glu Glu
450 455 460

Ala Pro Ala Ala Gly Gly Cys Val Ala Gly Gly Gly Val Leu Glu Gly
465 470 475 480

Ala Pro Gly Leu Ala Ile Ser Val Ala Glu Ser Val Ala Ala Pro Val
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Ala Val Ser Ala Pro Val Ala Glu Ser Val Pro Val Pro Val Pro Val
500 505 510

Pro Val Pro Val Pro Val Ser Ala Arg Ser Glu Ala Gly Leu Arg Ala
515 520 525

Gln Ala Glu Ala Leu Arg Gln Tyr Val Ala Val Arg Pro Asp Val Ser
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Leu Ala Asp Val Gly Ala Gly Leu Ala Cys Gly Arg Ala Val Leu Glu
545 550 555 560

His Arg Ala Val Val Leu Ala Ala Asp Arg Glu Glu Leu Val Gln Gly
565 570 575

Leu Gly Ala Leu Ala Ala Gly Glu Pro Asp Arg Arg Val Thr Thr Gly
580 585 590

His Ala Pro Gly Gly Asp Arg Gly Gly Val Val Phe Val Phe Pro Gly
595 600 605

Gln Gly Gly Gln Trp Ala Gly Met Gly Val Arg Leu Leu Ala Ser Ser
610 615 620

Pro Val Phe Ala Arg Arg Met Gln Ala Cys Glu Glu Ala Leu Ala Pro
625 630 635 640

Trp Val Asp Trp Ser Val Val Asp Ile Leu Arg Arg Asp Ala Gly Asp
645 650 655

Ala Val Trp Glu Arg Ala Asp Val Val Gln Pro Val Leu Phe Ser Val
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Met Val Ser Leu Ala Ala Leu Trp Arg Ser Tyr Gly Ile Glu Pro Asp
675 680 685

Ala Val Leu Gly His Ser Gln Gly Glu Ile Ala Ala Ala His Val Cys

690

695

700

Gly Ala Leu Ser Leu Lys Asp Ala Ala Lys Thr Val Ala Leu Arg Ser
705 710 715 720

Arg Ala Leu Ala Ala Val Arg Gly Arg Gly Gly Met Ala Ser Val Pro
725 730 735

Leu Pro Ala Gln Glu Val Glu Gln Leu Ile Gly Glu Arg Trp Ala Gly
740 745 750

Arg Leu Trp Val Ala Ala Val Asn Gly Pro Arg Ser Thr Ala Val Ser
755 760 765

Gly Asp Ala Glu Ala Val Asp Glu Val Leu Ala Tyr Cys Ala Gly Thr
770 775 780

Gly Val Arg Ala Arg Arg Ile Pro Val Asp Tyr Ala Ser His Cys Pro
785 790 795 800

His Val Gln Pro Leu Arg Glu Glu Leu Leu Glu Leu Leu Gly Asp Ile
805 810 815

Ser Pro Gln Pro Ser Gly Val Pro Phe Phe Ser Thr Val Glu Gly Thr
820 825 830

Trp Leu Asp Thr Thr Thr Leu Asp Ala Ala Tyr Trp Tyr Arg Asn Leu
835 840 845

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850 855 860

Gly His Arg Val Phe Val Glu Val Ser Pro His Pro Thr Leu Val Pro
865 870 875 880

Ala Ile Glu Asp Thr Thr Glu Asp Thr Ala Glu Asp Val Thr Ala Ile
885 890 895

Gly Ser Leu Arg Arg Gly Asp Asn Asp Thr Arg Arg Phe Leu Thr Ala
 900 905 910

Leu Ala His Thr His Thr Thr Gly Ile Gly Thr Pro Thr Thr Trp His
 915 920 925

His His Tyr Thr His His His Thr His Pro His Asn His His Leu Asp
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Leu Pro Thr Tyr Pro Phe Gln Arg Gln His Tyr Trp Leu Asp Ala Pro
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Thr Gly Ala Gly Asp Val Ala Ala Ala Gly Leu Glu Pro Ala Glu His
 965 970 975

Pro Leu Leu Ala Ala Thr Val Gln Leu Ala Asp Thr Asp Gly Cys Leu
 980 985 990

Leu Thr Gly Arg Leu Ser Leu Arg Ser His Pro Trp Leu Gly Asp Tyr
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Ala Val Gln Val Gly Glu Arg Val Gly Cys Thr Arg Ile Glu Gln Leu
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Val Tyr Ala Arg Gly Gly Ser Ala Cys Gly Gly Gly Gly Ala Ser Gly
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Arg Asp Gly Gly Asp Leu Leu Ala Glu Val Cys Leu Pro Glu Glu Ala
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Val Val Gln Pro Leu Ser Val Leu Leu Pro Gly Gly Thr Gly Phe Gly
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Glu Gly Ala Gly Phe Gly Glu Gly Val Arg Val Pro Ala Val Trp Gly
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Gly Val Ser Leu His Arg Ala Gly Val Thr Gly Val Arg Val Arg Val
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1310

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Val Leu Gly Val Val Gln Gly Trp Leu Gly Leu Glu Arg Phe Ala Gly
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Asp Gly Pro Val Asp Val Val Gly Ala Ala Val Trp Gly Leu Val Arg
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Ser Ala Gln Ala Glu His Pro Asp Arg Phe Val Leu Leu Asp Leu Asp
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Thr Asp Thr Asp Thr Gly Thr Asp Leu Asp Thr Gly Ala Gly Ala Gly
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Ala Gly Ala Gly Trp Gly Val Asp Gly Gly His Val Ala Ala Val Val
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Ala Cys Gly Glu Pro Gln Leu Ala Val Arg Gly Glu Arg Val Leu Ala
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Ala Arg Leu Thr Arg Leu Glu Ser Ser Val Asp Val Pro Ala Gln Arg
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Ser Gly Asp Val Ala Gly Arg Glu Val Leu Pro Trp Leu Ser Gly Gly
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Ser Val Leu Val Thr Gly Gly Thr Gly Val Leu Gly Ala Ala Val Ala
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Arg His Leu Ala Gly Val Cys Gly Val Arg Asp Leu Leu Leu Val Ser
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Ala Ala Leu Gly Ala Glu Val Arg Ile Val Ala Cys Asp Val Gly Glu
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Leu Thr Gly Val Val His Ala Ala Gly Val Leu Asp Asp Ala Thr Ile
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Ala Ser Leu Thr Pro Glu Arg Leu Gly Thr Val Phe Ala Ala Lys Val
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Asp Ala Ala Leu Leu Leu Asp Glu Leu Thr Arg Gly Met Glu Leu Ser
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Ala Phe Val Leu Phe Ser Ser Ala Ala Gly Ile Leu Gly Ser Ala Gly
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Gln Gly Asn Tyr Ala Ala Ala Asn Ala Ala Leu Asp Ala Leu Ala Tyr
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Trp Glu Glu Ala Ser Gly Met Thr Gly His Leu Ala Gly Thr Asp His
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Leu Ala Leu Phe Asp Ala Ala Leu Ala Leu Asp Arg Pro Val Leu Leu
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Pro Ala Asp Leu Arg Pro Ala Pro Pro Leu Pro Pro Leu Leu Gln Asp
1715 1720 1725

Leu Leu Pro Ala Thr Arg Arg Arg Thr Thr Arg Thr Thr Thr Gly
1730 1735 1740

Gly Ala Asp Asn Gly Ala Gln Leu His Ala Arg Leu Ala Gly Gln Thr
1745 1750 1755 1760

His Glu Gln Gln His Thr Thr Leu Leu Ala Leu Val Arg Ser His Ile
1765 1770 1775

Ala Thr Val Leu Gly His Thr Thr Pro Asp Thr Ile Pro Pro Asp Arg
1780 1785 1790

Ala Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg
1795 1800 1805

Asn Arg Leu Ser Arg Thr Thr Gly Leu Arg Leu Pro Thr Thr Leu Ala
1810 1815 1820

Phe Asp His Pro Asn Pro Thr Thr Leu Thr His His Leu His Thr Gln
1825 1830 1835 1840

Leu Leu Gly Ser Asp Ser Thr Ala Ser Ile Pro Ala Pro Arg Ala Ala
1845 1850 1855

Ala Val Pro Ala Asp Gln Asp Glu Pro Val Ala Ile Ile Gly Met Ala
1860 1865 1870

Cys Arg Tyr Pro Gly Gly Val Thr Ser Ala Glu Glu Leu Trp Glu Leu
1875 1880 1885

Leu Ala Ser Gly Arg Asp Thr Val Gly Glu Phe Pro Thr Asp Arg Gly
1890 1895 1900

Trp Asp Leu Glu Ala Leu Phe Asp Pro Glu Pro Gly Arg Pro Gly Thr

1905

1910

1915

1920

Ser Tyr Thr Arg Cys Gly Ser Phe Leu Tyr Asp Ala Gly Glu Phe Asp
 1925 1930 1935

Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro
 1940 1945 1950

Gln Gln Arg Leu Leu Leu Glu Ala Ser Trp Glu Ala Met Glu Gln Ala
 1955 1960 1965

Gly Ile Asp Pro Thr Thr Val Arg Gly Ser Gln Thr Gly Val Phe Ala
 1970 1975 1980

Gly Leu Ile Pro Gln Ala Tyr Gly Pro Arg Leu His Glu Asn Ala Ala
 1985 1990 1995 2000

Ala Asp Thr Glu Gly Tyr Val Leu Thr Gly Thr Ser Gly Ser Val Ala
 2005 2010 2015

Ser Gly Arg Ile Ser Tyr Thr Phe Gly Phe Glu Gly Pro Ala Val Ser
 2020 2025 2030

Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Leu Ala Cys
 2035 2040 2045

Gln Ala Leu Arg Ala Gly Glu Cys Ser Met Ala Leu Ala Gly Gly Val
 2050 2055 2060

Thr Val Met Ser Ser Pro Gly Ala Phe Val Glu Phe Ser Arg Gln Arg
 2065 2070 2075 2080

Gly Leu Ala Ala Asp Gly His Cys Lys Ala Phe Ser Ala Ala Ala Asp
 2085 2090 2095

Gly Thr Gly Trp Gly Glu Gly Val Gly Met Leu Leu Val Glu Arg Leu
 2100 2105 2110

Ser Asp Ala Arg Arg Asn Gly His Arg Val Leu Ala Val Val Arg Gly
2115 2120 2125

Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn
2130 2135 2140

Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala Asn Ala Gly
2145 2150 2155 2160

Leu Ser Ala Gly Asp Val Asp Ala Val Glu Ala His Gly Thr Gly Thr
2165 2170 2175

Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly
2180 2185 2190

Gln Asp Arg Ala Gly Glu Gly Pro Leu Trp Leu Gly Ser Val Lys Ser
2195 2200 2205

Asn Val Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Val Ile Lys
2210 2215 2220

Met Val Met Ala Leu Arg Asn Gly Leu Leu Pro Arg Thr Leu His Val
2225 2230 2235 2240

Asp Glu Pro Ser Pro His Val Asp Trp Ser Ala Gly Ala Val Gln Leu
2245 2250 2255

Leu Thr Glu Thr Val Pro Trp Pro Gly Gly Glu Gly Arg Leu Arg Arg
2260 2265 2270

Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Val Ile
2275 2280 2285

Leu Glu Glu Ala Pro Ala His Asn Ile Pro Ser Asp Thr Pro Ala Asp
2290 2295 2300

Asp Val Pro Gly Gly Pro Pro Ala Gly Glu Asp Ala Gly Ser Gly Glu
2305 2310 2315 2320

Glu Ala Ala Ala Gly Ser Pro Gly Val Trp Pro Trp Leu Val Ser Ala
 2325 2330 2335

Lys Ser Gln Pro Ala Leu Arg Ala Gln Ala Gln Ala Leu His Ala His
 2340 2345 2350

Leu Thr Asp His Pro Gly Leu Asp Leu Ala Asp Val Gly Tyr Thr Leu
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Ala His Ala Arg Ala Val Phe Asp His Arg Ala Thr Leu Ile Ala Ala
 2370 2375 2380

Asp Arg Asp Thr Phe Leu Gln Ala Leu Gln Ala Leu Ala Ala Gly Glu
 2385 2390 2395 2400

Pro His Pro Ala Val Ile His Ser Ser Ala Pro Gly Gly Thr Gly Thr
 2405 2410 2415

Gly Glu Ala Ala Gly Lys Thr Ala Phe Ile Cys Ser Gly Gln Gly Thr
 2420 2425 2430

Gln Arg Pro Gly Met Ala His Gly Leu Tyr His Thr His Pro Val Phe
 2435 2440 2445

Ala Ala Ala Leu Asn Asp Ile Cys Thr His Leu Asp Pro His Leu Asp
 2450 2455 2460

His Pro Leu Leu Pro Leu Leu Thr Gln Asp Pro Asn Thr Gln Asp Thr
 2465 2470 2475 2480

Thr Thr Leu Glu Glu Ala Ala Ala Leu Leu Gln Gln Thr Pro Tyr Ala
 2485 2490 2495

Gln Pro Ala Leu Phe Ala Phe Gln Val Ala Leu His Arg Leu Leu Thr
 2500 2505 2510

Asp Gly Tyr His Ile Thr Pro His Tyr Tyr Ala Gly His Ser Leu Gly

2515

2520

2525

Glu Ile Thr Ala Ala His Leu Ala Gly Ile Leu Thr Leu Thr Asp Ala
 2530 2535 2540

Thr Thr Leu Ile Thr Gln Arg Ala Thr Leu Met Gln Thr Met Pro Pro
 2545 2550 2555 2560

Gly Thr Met Thr Thr Leu His Thr Thr Pro His His Ile Thr His His
 2565 2570 2575

Ile Thr Ala His Glu Asn Asp Leu Ala Ile Ala Ala Ile Asn Thr Pro
 2580 2585 2590

Thr Ser Leu Val Ile Ser Gly Thr Pro His Thr Val Gln His Ile Thr
 2595 2600 2605

Thr Leu Cys Gln Gln Gln Gly Ile Lys Thr Lys Thr Leu Pro Thr Asn
 2610 2615 2620

His Ala Phe His Ser Pro His Thr Asn Pro Ile Leu Asn Gln Leu His
 2625 2630 2635 2640

Gln His Thr Gln Thr Leu Thr Tyr His Pro Pro His Thr Pro Leu Ile
 2645 2650 2655

Thr Ala Asn Thr Pro Pro Asp Gln Leu Leu Thr Pro His Tyr Trp Thr
 2660 2665 2670

Gln Gln Ala Arg Asn Thr Val Asp Ile Ala Thr Thr Thr Gln Thr Leu
 2675 2680 2685

His Gln His Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro Asp Asn Thr
 2690 2695 2700

Leu Thr Thr Leu Thr His His Asn Leu Pro Asn Thr Pro Thr Thr Thr
 2705 2710 2715 2720

Leu Thr Leu Thr His Pro His His His Pro Gln Thr His Leu Leu Thr
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Asn Leu Ala Lys Thr Thr Thr Thr Trp His Pro His His Tyr Thr His
 2740 2745 2750

His His Asn Gln Pro His Thr His Thr His Leu Asp Leu Pro Thr Tyr
 2755 2760 2765

Pro Phe Gln His His His Tyr Trp Leu Glu Ser Thr Gln Pro Gly Ala
 2770 2775 2780

Gly Asn Val Ser Ala Ala Gly Leu Asp Pro Thr Glu His Pro Leu Leu
 2785 2790 2795 2800

Gly Ala Thr Leu Glu Leu Ala Glu Gly Asp Gly Cys Leu Leu Thr Gly
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Arg Leu Ser Leu Arg Thr His Pro Trp Leu Ala Gly His Ala Val Gly
 2820 2825 2830

Gly Val Val Leu Leu Pro Gly Thr Ala Phe Ala Glu Leu Ala Leu His
 2835 2840 2845

Ala Gly Glu Ser Val Gly Cys Asp His Val Asp Glu Leu Thr Leu His
 2850 2855 2860

Thr Pro Leu Val Ile Pro Glu Val Gly Asp Val Thr Leu Gln Val Ala
 2865 2870 2875 2880

Ile Ala Ala Pro Asp Glu Ser Gly Arg Arg Met Met Thr Ile His Ser
 2885 2890 2895

Arg Gly Glu Gly Gly Ser Gly Gly Ala Asp Ala Ser Ala Ser Ala Trp
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Thr Arg His Ala Ala Gly Val Leu Ser Pro Ala Lys Asp Asp Asp Thr
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Ala Ser Tyr Glu Leu Leu Ala Gly Pro Trp Pro Pro Val Gly Ala Thr
2930 2935 2940

Pro Val Asp Leu Asn Thr Ala Tyr Asp Gln Met Ala Asp Ala Gly Phe
2945 2950 2955 2960

Ala Tyr Gly Leu Ala Phe Gln Gly Leu Arg Ala Ala Trp Arg Tyr Gly
2965 2970 2975

Asp Asp Ile Leu Val Glu Ala Arg Leu Pro Glu Glu Val Ser Gly Asp
2980 2985 2990

Ala Ala Ala Tyr Gly Leu His Pro Ala Leu Leu Asp Ala Ala Leu Gln
2995 3000 3005

Gly Thr Gly Leu Leu Ser Val Ala Gly Pro Gly Thr Pro Val Val Pro
3010 3015 3020

His Val Trp Asn Gly Leu Arg Phe Arg Thr His Gly Ala Val Ser Val
3025 3030 3035 3040

Arg Ala Cys Leu Ser Thr Leu Gly Ala Thr Gly Ala Ala Val Cys Val
3045 3050 3055

Arg Ile Thr Asp Asp Thr Gly Val Pro Val Ala Ser Val Asp Arg Leu
3060 3065 3070

Glu Leu Arg Pro Val Asp Met Gly Gln Leu Arg Ala Val Ser Val Ser
3075 3080 3085

Ala Gly Arg Arg Gly Ser Leu Tyr Ala Val Gln Trp Ala Glu Val Gly
3090 3095 3100

Pro Val Pro Val Cys Gly Gln Ala Trp Ala Trp His Glu Asp Val Gly
3105 3110 3115 3120

Glu Ser Gly Gly Gly Pro Val Pro Gly Val Val Val Leu Arg Cys Pro

3125

3130

3135

Asp Ala Gly Ala Asp Gly Gly Gly Gly Gly Gly Val Gly Glu Val Val
 3140 3145 3150

Gly Gly Val Leu Gly Val Val Gln Gly Trp Leu Gly Leu Glu Arg Phe
 3155 3160 3165

Ala Gly Ser Arg Leu Val Val Val Thr Arg Gly Ala Val Val Ala Gly
 3170 3175 3180

Pro Glu Asp Gly Pro Val Asp Val Val Gly Ala Ala Val Trp Gly Leu
 3185 3190 3195 3200

Val Arg Ser Ala Gln Ala Glu His Pro Asp Arg Phe Val Leu Leu Asp
 3205 3210 3215

Leu Asp Thr Asp Leu Asp Ser Gly Ala Asp Ala Asp Ala Gly Asn Glu
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Ala Gly Met Gly Ser Gly Leu Asp Gly Gly Arg Val Ala Ala Val Val
 3235 3240 3245

Ala Cys Gly Glu Pro Gln Leu Ala Val Arg Gly Glu Arg Val Leu Ala
 3250 3255 3260

Ala Arg Leu Thr Arg Leu Glu Ser Pro Val Asp Val Ser Gly Arg Glu
 3265 3270 3275 3280

Val Leu Pro Trp Leu Ser Gly Gly Ser Val Leu Val Thr Gly Gly Thr
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Gly Val Leu Gly Ala Ala Val Ala Arg His Leu Ala Gly Val Cys Gly
 3300 3305 3310

Val Arg Asp Leu Leu Leu Val Ser Arg Arg Gly Pro Asp Ala Pro Gly
 3315 3320 3325

Ala Glu Gly Leu Arg Ala Glu Leu Ala Ala Leu Gly Ala Glu Val Arg

3330

3335

3340

Ile Val Ala Cys Asp Val Gly Glu Arg Arg Glu Val Val Arg Leu Leu
 3345 3350 3355 3360

Glu Gly Val Pro Ala Gly Cys Pro Leu Thr Gly Val Val His Ala Ala
 3365 3370 3375

Gly Val Leu Asp Asp Ala Thr Ile Ala Ser Leu Thr Pro Glu Arg Leu
 3380 3385 3390

Gly Thr Val Phe Ala Ala Lys Val Asp Ala Ala Leu Leu Leu Asp Glu
 3395 3400 3405

Leu Thr Arg Gly Met Glu Leu Ser Ala Phe Val Leu Phe Ser Ser Ala
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Ala Gly Ile Leu Gly Ser Ala Gly Gln Gly Asn Tyr Ala Ala Ala Asn
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Ala Ala Leu Asp Ala Leu Ala Tyr Arg Arg Arg Ala Ala Gly Leu Pro
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Gly Val Ser Leu Ala Trp Gly Leu Trp Glu Glu Ala Ser Gly Met Thr
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Gly His Leu Ala Gly Thr Asp His Arg Arg Ile Ile Arg Ser Gly Leu
 3475 3480 3485

His Pro Met Ser Thr Pro Asp Ala Leu Ala Leu Phe Asp Ala Ala Leu
 3490 3495 3500

Ala Leu Asp Arg Pro Val Leu Leu Pro Ala Asp Leu Arg Pro Ala Pro
 3505 3510 3515 3520

Pro Leu Pro Pro Leu Leu Gln Asp Leu Leu Pro Ala Thr Arg Arg Arg
 3525 3530 3535

Thr Thr Arg Thr Thr Thr Thr Gly Gly Ala Asp Asn Gly Ala Gln Leu
 3540 3545 3550

His Ala Arg Leu Ala Gly Gln Thr His Glu Gln Gln His Thr Thr Leu
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Leu Ala Leu Val Arg Ser His Ile Ala Thr Val Leu Gly His Asn Ala
 3570 3575 3580

Pro Glu Met Ile Pro Val Asp Ser Ala Phe Arg Asp Leu Gly Phe Asp
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Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Gly Glu Ala Thr Gly
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Leu Arg Leu Pro Thr Ser Leu Val Phe Asp Gln Pro Asn Ala Ala Thr
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Leu Ala Arg His Leu Arg Arg Glu Leu Met Gly Asp Asp Ala Glu Gly
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Glu Thr Pro Ser Gln Val Ala Leu His Gln Val Ala Ala Asp Glu Pro
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Ile Ala Ile Val Gly Met Ala Cys Arg Phe Pro Gly Gly Val Cys Ser
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Pro Glu Glu Leu Trp Glu Leu Val Ala Ser Gly Gly Asp Ala Ile Gly
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Glu Phe Pro Ala Gly Arg Gly Trp Asp Leu Glu Gly Leu Phe Asp Ser
 3700 3705 3710

Asp Pro Asp Arg Ser Gly Thr Ser Tyr Ala Arg Tyr Gly Gly Phe Leu
 3715 3720 3725

Tyr Glu Ala Gly Glu Phe Asp Ala Asp Phe Phe Gly Ile Ser Pro Arg
 3730 3735 3740

Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ser
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Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Leu Ser Met Arg Gly
 3765 3770 3775

Ser Arg Thr Gly Val Phe Ala Gly Val Met Tyr His Asp Tyr Ala Ala
 3780 3785 3790

Arg Leu His His Val Pro Glu Gly Phe Glu Gly Leu Ile Ala Asn Gly
 3795 3800 3805

Ser Ala Gly Ser Val Ala Thr Gly Arg Val Ala Tyr Ser Phe Gly Leu
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Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val
 3825 3830 3835 3840

Ala Leu His Trp Ala Ala Gln Ala Leu Arg Ala Gly Glu Cys Ser Met
 3845 3850 3855

Ala Leu Ala Gly Gly Val Thr Val Met Ser Ser Pro Gly Thr Phe Val
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Glu Phe Ser Arg Gln Arg Gly Leu Ala Ala Asp Gly Arg Cys Lys Ala
 3875 3880 3885

Tyr Ser Ala Ala Ala Asp Gly Thr Gly Trp Ala Glu Gly Val Gly Met
 3890 3895 3900

Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Asn Gly His Arg Val
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Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn
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Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln

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Ala Leu Ala Asn Ala Gly Leu Thr Pro Ala Asp Val Asp Ala Val Glu
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Gly His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala
3970 3975 3980

Leu Leu Ala Ala Tyr Gly Gln His Arg Pro His His Arg Pro Leu Trp
3985 3990 3995 4000

Leu Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ala Gly
4005 4010 4015

Val Gly Gly Val Ile Lys Met Val Met Ala Leu Arg Asn Gly Leu Leu
4020 4025 4030

Pro Gln Thr Leu His Val Asp Glu Pro Thr Pro Gln Val Asp Trp Ser
4035 4040 4045

Thr Gly Ala Val Gln Leu Leu Thr Gln Pro Val Pro Trp Pro Ala Asp
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Gly Thr Asn Ala His Val Ile Leu Glu Glu Ala Pro Ala Ala Ala Gly
4085 4090 4095

Gly Ala Ala Gly Gly Gly Val Ser Val Gly Ala Pro Asn Pro Ala Leu
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Arg Ser Glu Ala Gly Leu Arg Ala Gln Ala Gln Ala Leu Arg Gln Tyr
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Val Ala Ala Arg Pro Asp Met Ser Pro Ala Asp Ile Gly Ala Gly Leu
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Ala Arg Gly Arg Ala Val Leu Glu His Arg Ala Val Ile Leu Ala Ala
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Asp Arg Glu Glu Leu Ala Gln Ala Leu Thr Ala Leu Ala Ala Gly Glu
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Pro His Pro His Ile Thr Thr Gly His Thr Arg Gly Ser Asp Arg Gly
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Gly Val Val Phe Val Phe Pro Gly Gln Gly Gly Gln Trp Ala Gly Met
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Gly Leu Thr Leu Leu Thr Ser Ser Pro Val Phe Ala Glu His Ile Asp
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Ala Cys Glu Lys Ala Leu Thr Pro Trp Val Pro Trp Ser Leu Thr Asp
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Ile Leu His Arg Asp Pro Asp Asp Pro Ala Trp Gln Gln Ala Asp Val
4260 4265 4270

Val Gln Pro Val Leu Phe Ser Ile Met Val Ser Leu Ala Ala Leu Trp
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Arg Ser Tyr Gly Ile Glu Pro Asp Ala Val Leu Gly His Ser Gln Gly
4290 4295 4300

Glu Ile Ala Ala Ala His Ile Cys Gly Ala Leu Ser Leu Lys Asp Ala
4305 4310 4315 4320

Ala Lys Thr Val Ala Leu Arg Ser Gln Ala Leu Ala Ala Val Arg Gly
4325 4330 4335

Arg Gly Ala Met Val Ser Leu Pro Leu Pro Ala Gln Asp Val Gln Gln
4340 4345 4350

Leu Ile Ser Glu Arg Trp Glu Gly Gln Leu Trp Val Ala Ala Leu Asn
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Gly Pro His Ser Thr Thr Val Ser Gly Asp Thr Thr Ala Val Glu Glu
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Leu Leu Thr His Cys Ala Asp Thr Gly Leu Arg Ala Lys Arg Ile Pro
4385 4390 4395 4400

Val Asp Tyr Ala Ser His Cys Pro His Val Gln Pro Leu His Asp Glu
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Leu Leu His Leu Leu Gly Asp Ile Thr Pro Gln Pro Ser Thr Met Pro
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Phe Phe Ser Thr Val Val Gly His Leu Val Trp Tyr Thr Thr Thr Leu
4435 4440 4445

Asp Ala Ala Tyr Trp Tyr Arg Asn Leu His Gln Pro Val Arg Phe Ser
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His Ala Ile Gln Thr Leu Thr Asp Asp Gly His Arg Pro Phe Ile Glu
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Ile Ser Pro His Pro Thr Leu Val Pro Ala Ile Glu Asp Thr Thr Glu
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Asn Thr Thr Glu Asn Ile Thr Ala Thr Gly Ser Leu Arg Arg Gly Asp
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Asn Asp Thr His Arg Phe Leu Thr Ala Leu Ala His Thr His Thr Thr
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Gly Ile Arg Thr Pro Thr Thr Trp His His His Tyr Thr Gln Thr His
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Pro His Pro His Asn His His Leu Asp Leu Pro Thr Tyr Pro Phe Gln

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4560

His Gln His Tyr Trp Leu Gln Pro Pro Thr Thr Thr Thr Asp Leu Thr
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Thr Thr Gly Leu Thr Pro Thr His His Pro Leu Leu Thr Ala Thr Leu
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Thr Leu Ala Asn Asn Asn Thr Gln Leu Leu Thr Gly Arg Leu Ser Leu
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Glu Gly Ala Val Asp Val Gln Val His Ile Asn Pro Pro Asp Asp Thr
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Asp Thr Arg Ser Leu Thr Ile Tyr Ser Arg Ser Glu Asn Ala Pro Ala
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Ala Ala Pro Trp Arg His His Ala Thr Ala Val Leu Gly Thr Lys Thr
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Ser Arg Ile Glu Thr Gly Arg Ser His Asp Asp Leu Ser Met Trp Pro
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Gly Asp Tyr Glu Ala Asn Gly Phe Val Tyr Gly Pro Ala Phe Arg Gly
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Leu Thr Ala Ala Trp Arg Leu Gly Asp Glu Val Phe Ala Glu Val Arg
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Leu Pro Glu Gln Val His Gly Glu Ala Ser Ala Tyr Asn Leu His Pro
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Ala Leu Leu Asp Ala Ala Leu His Ala Ala Ala Phe Ala Pro Ser Gly
4785 4790 4795 4800

Ser Leu Pro Gln Gly Ser Val Pro Phe Ser Phe Thr Gly Val Thr Leu
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His Ala Ala Asn Ala Ser Ser Leu Arg Val Arg Leu Ser Pro Ala Asp
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Pro Asn Ser Gly His Ala Ala Val Ser Val Leu Val Thr Asp Asp Thr
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Gly Thr Pro Val Ala Ser Val Glu Ala Leu Ala Val Arg Pro Leu Ala
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Val Ser Gly Arg Glu Val Leu Pro Trp Leu Ser Gly Gly Ser Val Leu
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Gln His Thr Thr Leu Leu Ala Leu Val Arg Ser His Ile Ala Thr Val
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Gly Leu Asp Pro Thr Glu His Pro Leu Leu Gly Ala Thr Leu Glu Leu
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gcg act gac ggt gga gcg ctt ctt gca ggg cgc ttg tct ttg agg tcg 144
Ala Thr Asp Gly Gly Ala Leu Leu Ala Gly Arg Leu Ser Leu Arg Ser
35 40 45

cat ccg tgg ctg gct gac tac gag gtc ggc ggc acg gtg ctg ctg tcg 192
His Pro Trp Leu Ala Asp Tyr Glu Val Gly Gly Thr Val Leu Leu Ser
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ggc gcc acc ttc ctc gaa ctc gcc ctt cat gcg ggc aca tac gtg ggc 240
Gly Ala Thr Phe Leu Glu Leu Ala Leu His Ala Gly Thr Tyr Val Gly
65 70 75 80

tgc gac cga gtg gat gag ctg acg ctg cat gcg ccg ctg gtg gtt cct 288
Cys Asp Arg Val Asp Glu Leu Thr Leu His Ala Pro Leu Val Val Pro
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Val Asp Gly Gly Val Ser Val Gln Val Gly Val Ala Ala Ala Asp Gly
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gag ggg cgg cgt ttg gtg agt gtg tat gcg cgg ggt ggg agt gct tgt 384
Glu Gly Arg Arg Leu Val Ser Val Tyr Ala Arg Gly Gly Ser Ala Cys
115 120 125

ggt ggg ggt ggt gcg tcg ggt ggg gtg tgg acg tgt cat gcc tcg ggg 432
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gtg ctg 438
 Val Leu
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 35 40 45

His Pro Trp Leu Ala Asp Tyr Glu Val Gly Gly Thr Val Leu Leu Ser
 50 55 60

Gly Ala Thr Phe Leu Glu Leu Ala Leu His Ala Gly Thr Tyr Val Gly
 65 70 75 80

Cys Asp Arg Val Asp Glu Leu Thr Leu His Ala Pro Leu Val Val Pro
 85 90 95

Val Asp Gly Gly Val Ser Val Gln Val Gly Val Ala Ala Ala Asp Gly
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Glu Gly Arg Arg Leu Val Ser Val Tyr Ala Arg Gly Gly Ser Ala Cys
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Val Leu
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 of SEQ ID NO:1.

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<220>

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